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Complete Car Specifications in this Issue

MOTOR WORLD

for

DEALERS, JOBBERS AND GARAGEMEN

Volume L
No. 1

New York, January 3, 1917

Ten cents a
Two dollars a

HUDSON SUPER SIX

Are You Content to Remain the Dealer of the Second Choice Car?

We don't reproduce here an advertisement to car buyers. For our talks to users and to dealers are much alike on Hudson Super-Six. Why men buy it is exactly why other men should sell it.

Last year thousands of buyers had to take second choice because there were not enough Super-Sixes to go around. Were you one of the dealers who took care of this overflow? Then, too, the average automobile dealer is through in August. His profits stop. His business is at a standstill for several months.

Did Your Income Stop?

Did your income stop last summer or did you, like Hudson dealers, make a profit in September, in October and in November?

Super-Six deliveries to users in October and November exceeded any two month's previous records in our history.

The demand for the Super-Six increased—it did not drop off as your business probably did, when the normal "slack" season for automobile selling arrived. Then Hudson dealers were having their three best money-making months.

Reasons for this Remarkable Showing

The Super-Six motor, an exclusive Hudson feature, has increased motor efficiency 80%. No other car can use it. It is patented.

The Hudson Super-Six has won all worth-while records.

Across the continent from San Francisco to New York and back—6,972 miles in 10 days and 21 hours. All previous one way records were beaten—no other car ever attempted the round trip.

The fastest time up Pike's Peak against twenty competitors.

100 miles at the rate of 74.67 miles per hour.

1819 miles in 24 hours.

One mile at the rate of 102.53 miles per hour.

Now all this has made it EASY to sell the Hudson Super-Six.

If you must exert effort to sell every car you handle, your business can't be profitable. Prospects must come to you, otherwise your business is all hard work.

How to Become a Hudson Dealer

Not by merely answering this advertisement. No, we are not so free with the Hudson money-making franchise as that.

Now that our organization is so large, the unquestioned largest automobile distributing organization in the fine car field, we don't have so many opportunities. We are not satisfied just because a contract is made with someone to handle a certain territory.

It is more important that we know how that territory is to be handled and more than that what potential qualities the man has for expansion and growth.

For you know by Hudson history we have never slackened, never failed to show each year a marked development in our own growth. And today the dealers who are most valuable are the ones who have grown with us.

Our conception of this business is that the dealers and we are partners and we must all make profits.

If you don't know us and would like to tie your future to such a partnership, write us.

Who knows to what it may lead?

HUDSON SUPER SIX

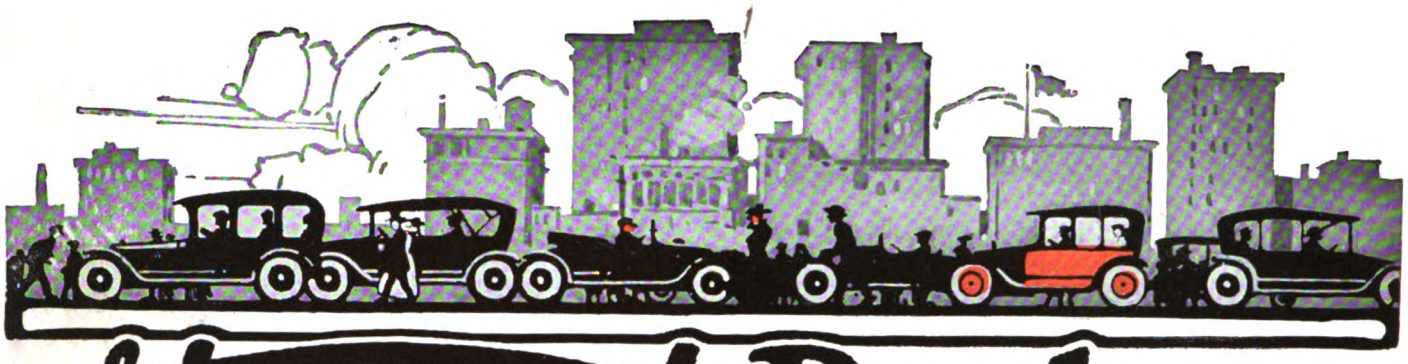
HUDSON MOTOR CAR COMPANY
DETROIT, MICHIGAN

HUDSON SUPER-SIX

Editorial Contents—Page 8

Advertisers' Index—Next to Last

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Stewart Products



$50

Warner
Auto-Meter



$6

Stewart
Motor Driven
Warning Signals



$10

Stewart Speedometer
for Fords

Progressive Dealers Know It Pays to Sell Leaders Only

Live dealers everywhere—men who do a big business and are making big money—know by experience that it pays to sell *Leaders Only*. They stock, sell and feature Stewart Products. The wide demand for Stewart Products is extremely significant to the wise dealer. It points out to him the unmistakable trend of public opinion—the tremendous demand for the best known and most widely advertised automobile accessories on the market.

The dealer who has achieved really big success does not waste his time, energy and money in trying to "put across" unknown accessories. He banks on a steady, consistent "turnover." He handles the one established line—the one that is universally accepted as standard. He carries a complete stock of Stewart Products.

Stewart Products offer you a steady source of income all year 'round—not only in Summer, but also in Winter, when you need it most. Determine right now to sell nothing but Leaders. Concentrate on, "boost," feature and sell Stewart Products—the fastest-selling and easiest-to-sell of all automobile accessories.

Stewart-Warner Speedometer Corp.
Chicago, U. S. A.

Stewart
PRODUCTS
PRESTIGE
QUALITY
SERVICE
SATISFACTION
MADE IN U.S.A.



$25

Stewart
Speedometer



$3.50

Stewart
Hand Operated
Warning Signal



$1

Stewart V-Ray
Spark Plug



$10

Stewart
Vacuum System



$12

Stewart
Tire Pump

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Studebaker
Established 1852

HERE'S ACTUAL PROOF OF STUDEBAKER SUPERIORITY OVER THE AVERAGE OF ALL CARS

In this issue of "Motor World" you will find comparative specifications and a review of the new models of the leading American cars.

IN SPECIFICATIONS

Turn to pages in this issue containing specifications of various cars, and blue pencil the Studebaker specifications. Read them carefully—and then compare them, point by point, with the other cars in the Studebaker price range. Then compare Studebaker specifications, point by point, with cars costing more than Studebaker cars—and see for yourself just what it costs to obtain the same essentials of good motor car construction.

See if you can find another four-cylinder car at $940 with a 3⅞-inch bore x 5-inch stroke, forty horsepower motor, a full-floating rear axle with complete equipment of Timken bearings, and with plenty of room for seven people in comfort, for anywhere near the price.

Take the specifications of all the six-cylinder cars listed—and note what you have to pay to obtain the full fifty horsepower of the Studebaker "Six," the 122-inch wheelbase, seven-passenger capacity, full-floating rear axle and complete equipment of Timken bearings. See if you will find, in either a Four or a Six, individual and adjustable front seats, a reversible seat next to the driver's, arm-chair auxiliary seats, and a host of other Studebaker conveniences at anywhere near the Studebaker price.

These are specific facts—they actually show where the Studebaker specifications, in comparison with the specifications of other cars, offer higher quality and greater value.

IN COMPARATIVE ANALYSIS

And, point by point, this analysis made by "Motor World" in a purely unprejudiced way, proves that every important feature of Studebaker construction has been adopted by the majority of motor car builders. It shows that every important feature of Studebaker construction is used either by the largest number of makers, or by those makers whose cars sell for a much higher price than Studebaker.

"Motor World's" comparative analysis in this issue gives proof that not only in power but in every important feature of construction, regardless of cost, Studebaker uses designs recognized by the majority of engineers as the best—and it offers further convincing proof that Studebaker is the world's leading manufacturer of fine cars.

STUDEBAKER

South Bend, Ind. **Detroit, Mich.** **Walkerville, Ont.**

Address All Correspondence to Detroit

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Sell Your Country Friends Electricity

The rural districts of the country comprise a field rich in prospects for small town auto dealers and garage owners.

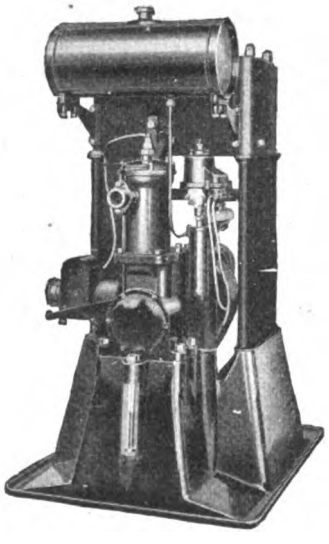
Every prosperous and up-to-date farmer is keen on having modern up-to-date city conveniences for his home.

Electricity with its light, heat and power for the farmer is in big demand.

The One Practical Outfit

The Uni-Lectric complete unit lighting system is the first and only device ever designed that fulfills *all* of the requirements for *light* and *power* in the same manner as a city central service station.

It is built in one complete, compact unit, with engine and generator direct-connected.



Uni-Lectric
GASOLINE-ELECTRIC UNIT
LIGHTING SYSTEM

No Bolts—No Batteries

It delivers standard 110-volt direct current—and uses the regular bulbs, same as used on a city circuit. Also operates devices such as the electric iron, vacuum cleaner, toaster and small motors for power purposes. Our patented, high-speed, rotary sleeve valve engine eliminates *all* necessity for storage batteries.

The Uni-Electric is a tried and proven success in the hands of operators. We have demonstrated that the Uni-Lectric fully solves the lighting problem on the farm today, and are now going to these buyers in a big way with a big campaign.

The particular knowledge of mechanics and electricity that the average auto dealer and garage man has makes him a valuable dealer for us. Uni-Lectric machines are easily sold, they stay sold, and the margin of profit is unusually liberal.

Write us today for full particulars of our exclusive dealer's proposition.

THE WATERMAN MOTOR CO.

137 MT. ELLIOTT AVE. DETROIT, MICHIGAN

Make a Demonstrating Outfit Pay Its Own Way

Get your demonstrating outfit and install it in your own place of business. If you care to, wire it up to run your own light and electric sign on the front of your building.

It can also be used by the garage man for power purposes. It has sufficient capacity to run an electric motor which will operate an air compressor, a small lathe or drill press. Can also be used for operating the small battery charging outfits now on the market.

The Uni-Lectric has a capacity of all the way from one to 50 lights, and this full capacity is at your command at all times, because you are not depending on storage batteries.

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MOTOR WORLD
FOR DEALERS, JOBBERS AND GARAGEMEN

PUBLISHED EVERY WEDNESDAY

The Class Journal Co.
231-241 West 39th Street, New York City
Horace M. Swetland, President
W. I. Ralph, Vice-President E. M. Corey, Treasurer
A. B. Swetland, General Manager

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Cleveland—516-517 Swetland Bldg., Phone Prospect 167

Subscription, Per Annum (Postage Paid).....$2.00
Foreign and Canadian Subscriptions..... 4.00
Single Copies (Postage Paid).....10 Cents

Postage Stamps will be accepted in payment for subscriptions. Checks, Drafts and Money Orders should be made payable to MOTOR WORLD.
The payment of subscriptions will be shown by stamping the date of expiration—the month and year—on the wrapper that carries your paper each week. No other acknowledgment necessary.

Cable Address, "MOTORWORLD," New York
Entered as second-class matter at the New York Post Office, Nov., 1900
Member of the Audit Bureau of Circulations

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The Class Journal Co.

Editorial Contents

Stop the Randall Rider.....6-7
This measure would make the price of business papers almost prohibitive.

No. 1000.....8-9
Here is Short-Cut No. 1000; it is one of the best that have appeared in the last 20 months.

Super-Service in a Super-Building.....10-13
How the Hudson company looks after service in New York.

Dealers Who Have Made Good.....14
E. M. Robbins of Chicago; the story of his success.

Motor Car Specifications.....16-23
These are complete specifications of all American cars, tabulated for ready reference.

Editorial Observation.....24
Winter Business.....26-27
The Latest Accessories.....28-29
The Retail News.....30-31
Cole Service Meet in Convention.....43
System Department.....44-45
Inquiry Department.....38-39
Building Construction.....36-37
Better Mechanics' Department.....40-42
Packard Opens Wall Street Salesroom.....46
Warnoia Chosen Name of New Horn.....46
Des Moines to Advertise Cooperatively.....48
Overland Raises Prices.....48
Tire Prices Advance.....48
Carl Page Gets Jordan.....48
Des Moines Bars Show Advertising.....49
Motor World Guide.....50-51

Advertisers' Index on Pages 126-127

"NORMA"
BALL BEARINGS
(Patented)

As car manufacturer or dealer, what you really sell is service, embodied in more or less degree in your car. As car owner, what you have really paid for in the car you bought is service, in more or less degree. And that service is largely determined by the service quality of the magneto, the lighting generator, the starting motor.

The magnetos known far and wide for their service-giving capacity—the lighting generators and starting motors everywhere recognized for dependability of service—all are fitted with "NORMA" Bearings. Why? Because of the superlative capacity of "NORMA" Bearings for unfailing service at high speeds.

See That Your Electrical Accessories are "NORMA" Equipped



THE NORMA COMPANY OF AMERICA
1790 BROADWAY NEW YORK
Ball, Roller, Thrust, Combination Bearings

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Overland Dealer Shows Huge Sales Gains in Milwaukee

Two thousand one hundred and twenty-one *more* Overlands were sold in Milwaukee this season than in *1914 and 1915 combined.*

And just as substantial gains are being felt by thousands of other Overland dealers in *all parts of the country.*

For Overland popularity has swept like a wave over the whole United States — and Overland dealers are profiting by it.

"Made in U. S. A."

The Willys-Overland Co.

Toledo Ohio

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Vol. XLIX | New York, U. S. A., Wednesday, January 3, 1917 | No. 14

Stop Him!



Unless the Randall Rider on the Post Office Appropriation Bill is defeated it will impose a tax on every man who reads trade papers or magazines. The following pages tell why and how it is a TAX ON INTELLIGENCE and tell how YOU can help stop the rider

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STOP THE Randall Rider



THE work the business papers are doing is going to be taxed by the United States government if the Randall rider passes along with the Post Office Appropriation bill to which the rider is attached.

The rider would compel business papers—including your MOTOR WORLD—to pay postage on the parcel post zone plan. This tax would of necessity have to be added to the subscription price, which would make MOTOR WORLD cost in the Far West $2.50 more to deliver than it now costs.

This is plainly a tax on intelligence, an assessment on brains—your brains and the brains of the business paper. Trade papers do nothing except distribute intelligence. They are educational. They are not printed for the amusement of readers. They are not purely news publications. They are educational institutions.

If a trade did not want trade information, trade business methods, trade sales methods, trade mechanics, analyses of the trade's goods and a thousand other educational features there would be no field for the trade paper.

But because the men in a trade do want these things the trade paper was conceived. MOTOR WORLD has spent thousands of dollars building up its present educative organization.

Think what the business paper means to its readers. It keeps the doctor closely in touch with the great advances in surgery and medicine; it keeps the lawyer in touch with decisions of vital interest to his clients; it keeps the architect in touch with the latest types of buildings in every quarter of the globe; it keeps the mechanic informed on the best practices in mechanics.

And yet the Randall rider would put a tax on all this—every business paper is affected alike. For example, it would make MOTOR WORLD pay $2.50 more than it now pays to deliver a year's MOTOR WORLDS on the Pacific Coast, and this extra cost, added to the present price of $2 would require the Pacific Coast dealer to pay $4.50 for what he now gets for $2.

That surely is an injustice to the readers of business papers. It grades them into classes according to how far they are from the big publishing centers and makes the more distant classes pay several times more than those nearer the centers of publication.

Supposing the bill provided that you must pay 12 cents instead of 2 cents to send a letter 1800

To the Hon. ———————

Washington, D. C.

The Randall rider on the Post Office Appropriation bill is unjust, unreasonable and unnecessary and will work the undersigned a great harm. It will prevent the circulation of business papers, which are invaluable to our business and which bring a class of information and education obtainable from no other source. In the interest of business we ask you to use your influence against this rider.

Name of company .....

Your name .....

Your city .....

Your State .....

Send this letter to your Congressman TODAY.

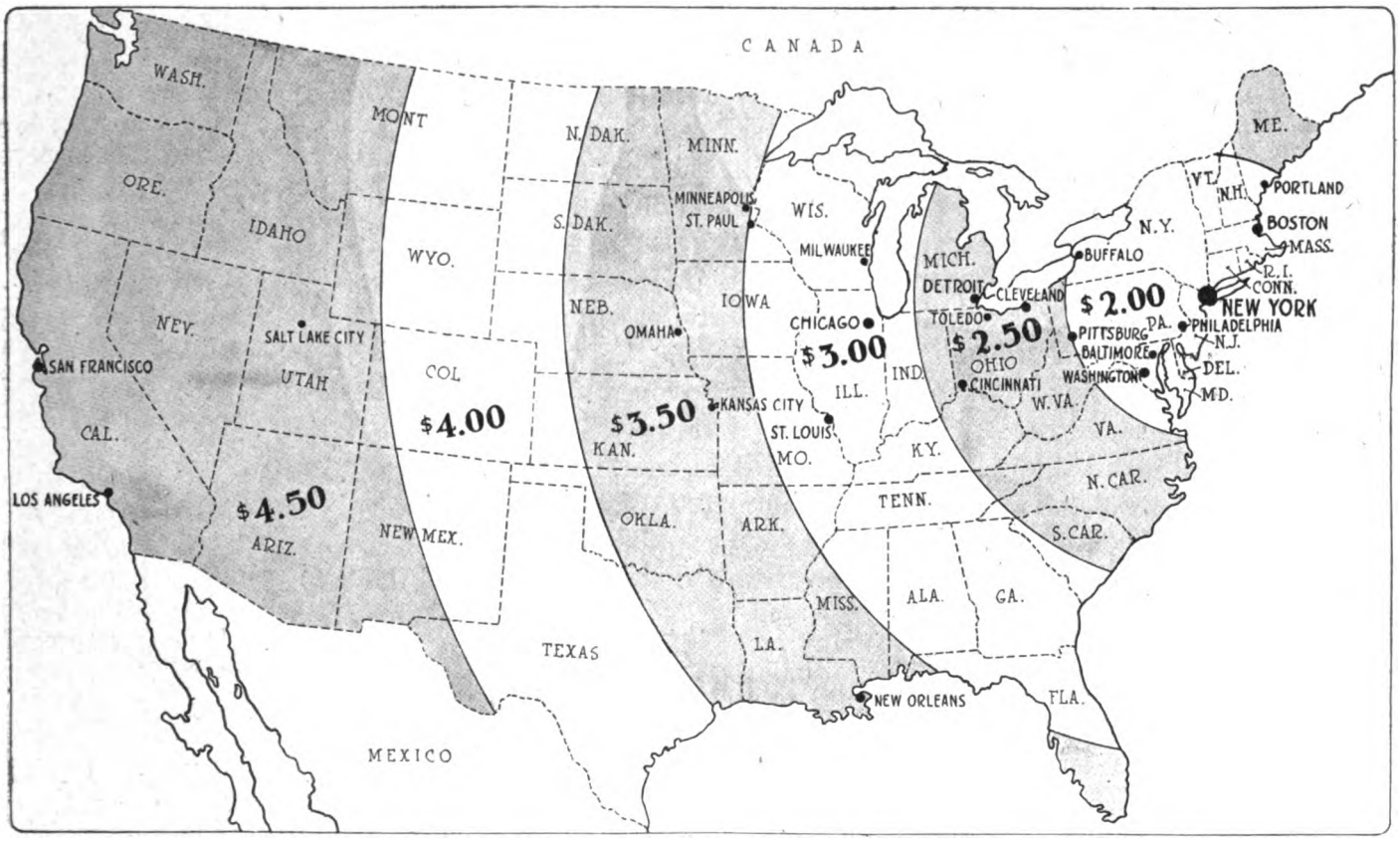
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What You Might Have to Pay for Motor World

This is how the Randall rider would affect the price of MOTOR WORLD *to you, all depending on how far you are from New York City. The weight of 52 issues of* MOTOR WORLD *is about 50 pounds. Present rates are 1 cent a pound to all points.*

Mailing Distance in Miles	Rate Per Pound	Added Cost Per Year	Present Subscription	Possible Subscription
Up to 300	1c	None	$2.00	$2.00
300- 600	2c	$0.50	2.00	2.50
600-1000	3c	1.00	2.00	3.00
1000-1400	4c	1.50	2.00	3.50
1400-1800	5c	2.00	2.00	4.00
Over 1800	6c	2.50	2.00	4.50

This Map Shows the Zones Under the Randall Rider Plan and the Motor World Prices Necessary



miles. Would that seem just? Yet that is the proportion of increase provided for the trade paper in this Randall rider—and the trade paper is your weekly letter of trade intelligence.

The Post Office Department doesn't need the money, for it netted $5,000,000 last year.

The parcel post zone plan protects the small merchant from the mail order houses, but in the trade paper field there is no local, small trade paper to protect, so there is no necessity on this score.

The bill has no excuse for being.

The measure seems to be one of those pieces of locoed legislation which run rampant every session and have to be stopped by the people because the representatives who are paid for REPRESENTING the people don't seem to understand what's right and what's wrong.

Only the voice of the readers of business papers will stop this bill.

If a flood of letters pours into Congress the rider will be taken off the bill. Write to your Congressman asking him to use his influence against the measure. In the coupon on the opposite page is a suggested form of letter. Write on your own letterhead.

The important point is that a lot of these letters should be mailed AT ONCE if you do not want the cost of all your magazines and business papers sent skyward.

Do it TO-DAY!

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD *Road Man*

20 Months of Short-Cuts

THIS department of MOTOR WORLD was opened in the April 14, 1915, issue—20 months ago. Since then it has occupied two pages in every issue.

Repairshop Short-Cuts has proved a phenomenal success. Garagemen and repairmen have welcomed the department because of its great value to them.

Since the department was started MOTOR WORLD has published 1000 of the best ideas of the best garagemen and mechanics in the country. MOTOR WORLD editorial representatives have scoured the best garages and shops for these ideas; in addition, hundreds of letters have come to us inclosing sketches and brief ideas which have been included in the department.

So popular has this department proved and so insistent were demands for back issues that it was imperative to collect all this data and publish it in book form. This was done, but the book was soon exhausted. A second book was published and that, too, was soon exhausted.

The third book is now ready for distribution. It is the full size of MOTOR WORLD—9 by 12 in.—and contains 140 pages, including an index.

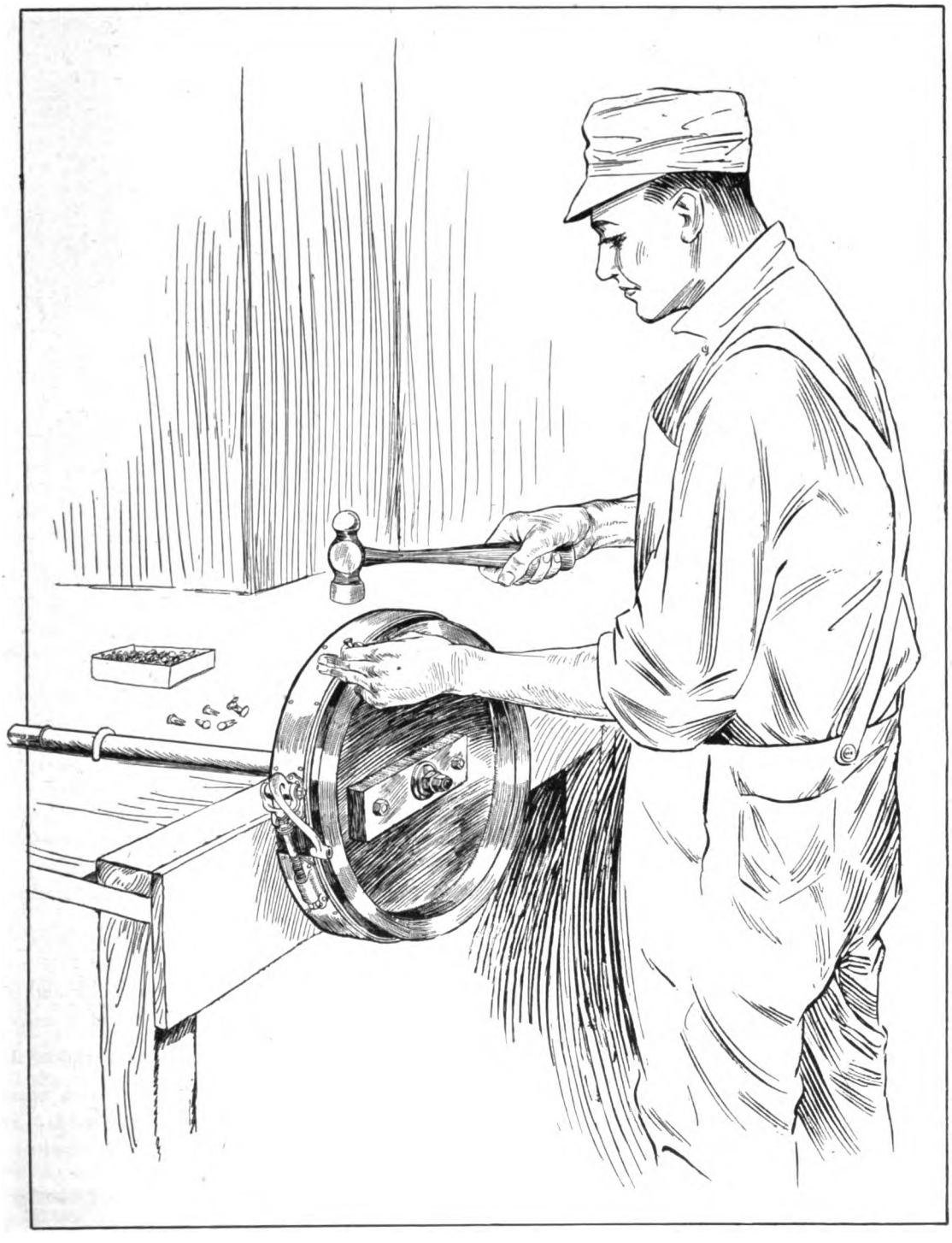
During this year MOTOR WORLD will continue to enlarge this collection of Repairshop Short-Cuts. The Editorial Department urges your co-operation and asks that you send along your ideas to be included in this department.

(No. 1000) Brake Band Relining

EXTERNAL contracting brake bands may be relined with the greatest facility, by clamping the new lining between the band and the face of an old flywheel, and then riveting the lining to the band with split rivets. The rivets may be driven in as readily as though they were so many tacks, and are properly clinched by the flywheel face. Other important advantages gained by this method are that the band is not sprung out of true, and the lining hugs the band evenly all the way around.—J. C. Kopshac, Mechanical Foreman with Service Dept., Detroit Cadillac Motor Car Company, New York.

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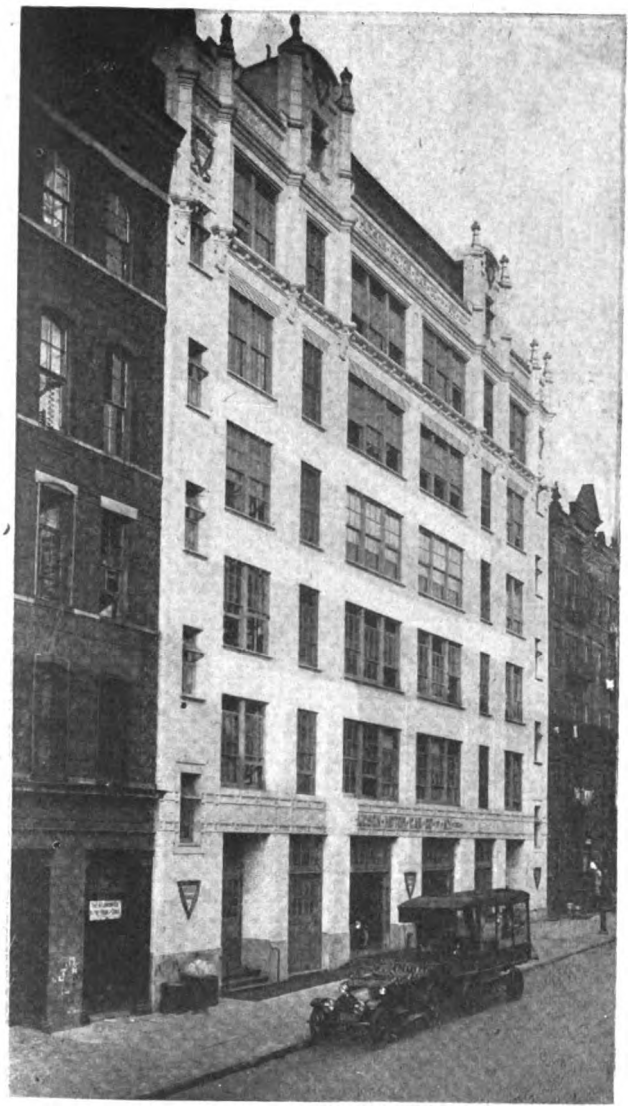
No. 1000



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The House of Super Service

Six Floors of Efficiency, Light and System at the New York Home of the Hudson



The station stands out in sharp contrast to its less distinctive neighbors

FIVE THOUSAND cars demanding service; jobs to be turned out at the rate of one every 3 min.; satisfactory service to be given to every Hudson owner—and a plot of ground measuring 100 x 100 ft.

This was the problem that faced Harry S. Houpt, president of the Hudson Motor Car Co. of New York. The number of cars requiring service had outgrown the capacity of the old station and the condition was daily growing worse.

How Many Departments?

The first question to be settled was, "How many departments must we have?" Acting on the basis that subdivision of work breeds specialists, six departments seemed necessary. These were:

1—Inspection, testing and routing.
2—Stock.
3—Executive and accounting.
4—Light repair.
5—Painting.
6—Heavy repairs.

The next two questions went hand in hand. They were: "How many stories must we have?" and "How can we best arrange the departments?" Experience had shown that at least 130 cars must be accommodated at one time and that there must be room for growth. A rough sketch soon showed that six stories and a basement would be required.

That settled, the location of the departments was still to be determined.

First came the basement. This, being dark, was best suited for storing cars awaiting the arrival of the owner. Besides the saving in illumination, the cars could most readily be raised to the ground floor and sent out without disturbance. The ground floor was easily disposed of, too. The first department—inspection, testing and routing—logically belonged there, and was so placed.

Looking over the remaining departments, it was seen that the stock deparment naturally fell in with the executive and accounting department. Neither required a whole floor, and both must be located in a place convenient to the customers. So these departments were placed on the second floor. Here the customer could settle his accounts, get his supplies or consult with the manager with absolutely no interference with the other departments.

A careful survey of the conditions existing in the old service station had shown that a large number of the repair jobs could be placed in the one department of light repairs. These included electrical, radiator, steering gear, front axle, front springs, fenders, and, in short, all those short jobs that make up so much of the service-station work.

For several reasons the third floor was best suited for this department. First, it was nearer the ground floor than any of the remaining floors and the saving in power and time would be appreciable. Next, these repairs, with the exception of the electrical, did not require as much light as the remaining departments. And the electrical work could be done near the windows. So the light repair department was placed on the third floor.

Two departments and three floors remained. These were the heavy repair department and the paint shop. The former required two floors and the latter only one.

More workmen were required in the heavy repair department, and their work was of a nature that needed a large amount of light. Hence the top floor, with its large skylights, was best fitted for the machine shop of that department.

The fifth floor, then, was the logical place for the remainder of the heavy repair, leaving the fourth floor for the paint shop.

Now the Stage Was Set

Now the stage was set, but the play of "Super-Service" could never be produced without a corps of efficient employees bound together by a well-working system.

Segregation of work into departments had been the first step in that direction.

The next was to keep a complete record of the car as it passed through the departments, so that each person having anything to do with the job would know its history, even as well as the physician knows the history of each patient.

Obviously the first thing to do was to get the past record of the car at the time it was received on the first floor. For this the loose-leaf form, Fig. 1, is used.

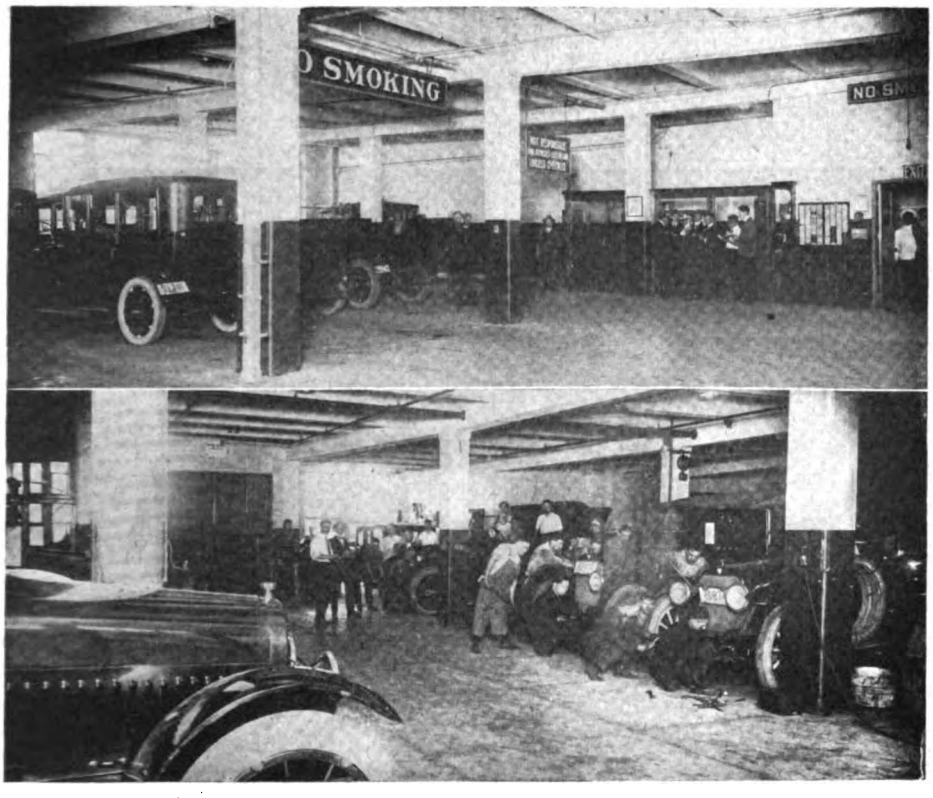
SERVICE—must be judged by conditions under which it is rendered, and the circumstances which necessitate it.

¶ Co-operation is essential.

¶ If he who wants service will contribute towards it he will be better satisfied.

This is the sentiment that permeates the entire organization—from the manager down

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Above—Another view of the ground floor, with the receiving office at the right
Below—Part of the fourth floor, with the body repair department in the rear

In addition to filling in the information indicated, model, mileage and general condition of the car are noted. The car is then taken by a tester, inspected and given a road test, and the work that should be done determined.

The tester then makes out the instruction card, Fig. 2, and turns the car over to the routing department.

From here the car is taken by elevator to the department that handles work of the nature indicated on the instruction card.

At the same time the record of the car is sent to the accounting department and to the department that is to receive the car.

Each subsequent movement of the car is promptly reported to the accounting department, and at any time the customer can tell exactly where his car is, what has been done and what remains to be done.

All interdepartment orders, requisitions, etc., are promptly reported to the accounting department and recorded.

Each workman, too, keeps the time on each job on the time card, Fig. 3, and forwards that to the accounting department at the completion of his work. The result is that the customer can immediately get a statement of his indebtedness at the time he receives his car, and if any question arises it can be settled then and there.

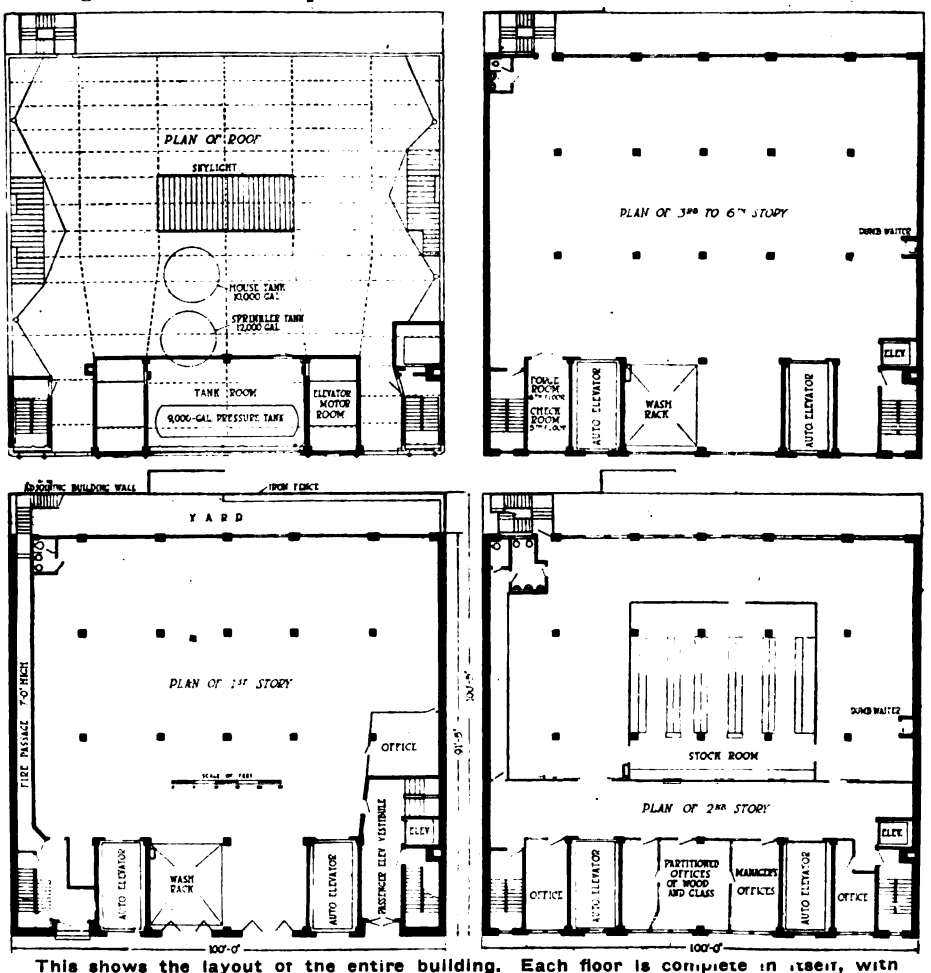
Before the car is released, however, it is given a thorough road test by one of the testers. If any trouble is noted the car is immediately sent back to the shops. If all right it is O. K.'d and placed in the basement pending the arrival of the owner.

All repairs and adjustments are brought to the owner's attention on his arrival and the owner's approval of the work done obtained before the car is delivered. This is not done so much with the idea of making the owner commit himself against further complaint, but to give him, as far as possible, personal service.

Another feature that is unique and very effective in forestalling complaint is that every part removed from a car and replaced with a new one is tagged and held for a period of 3 weeks. *Then if any question arises as to the advisability of having replaced the part the defective part is there.*

Quick service to cars disabled on the road is possible through the use of three service trucks. All small parts are hurried out on the road in a motorcycle with a side-car attachment. In the stockroom an emergency bag is always packed and ready for a hurry call, so that no time is lost in wondering what tools to take and where to find them.

Suppose Mr. Owner gets towed in about noon Monday—has seized pistons and a broken connecting-rod—and must have his car Tuesday noon. His request is calmly received and the car promised—and delivered—at the time desired.

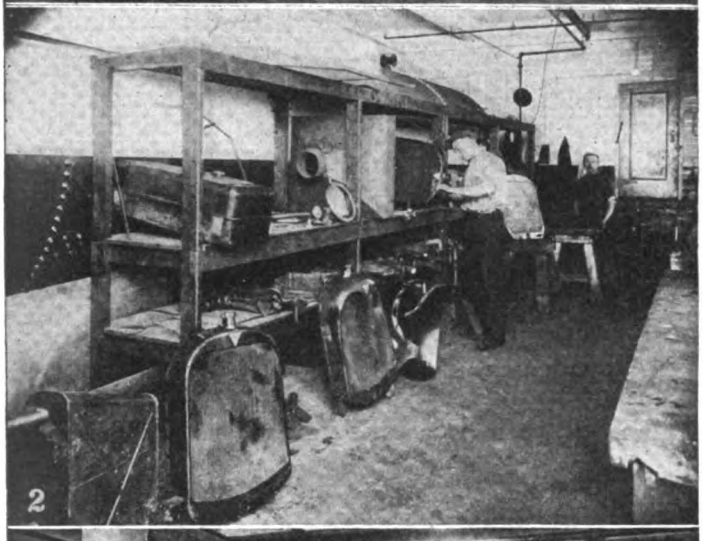


This shows the layout of the entire building. Each floor is complete in itself, with office, washroom and toilets. Note that a truck may go direct from the elevator to the stock room and unload, and that parts may be taken from the stock room to any floor by the dumbwaiter

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From Cellar to Roof in the New Hudson Service Station



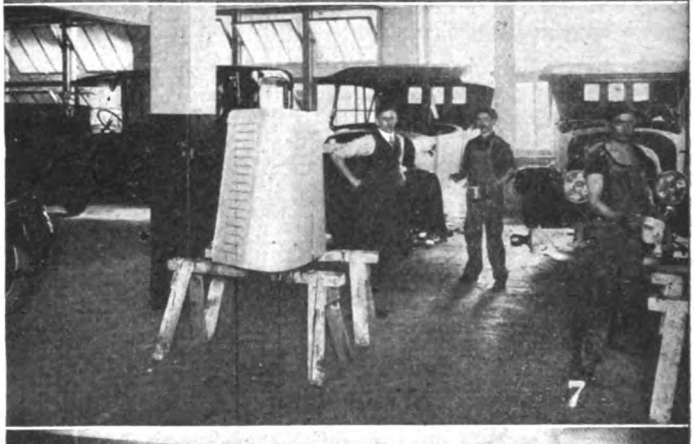


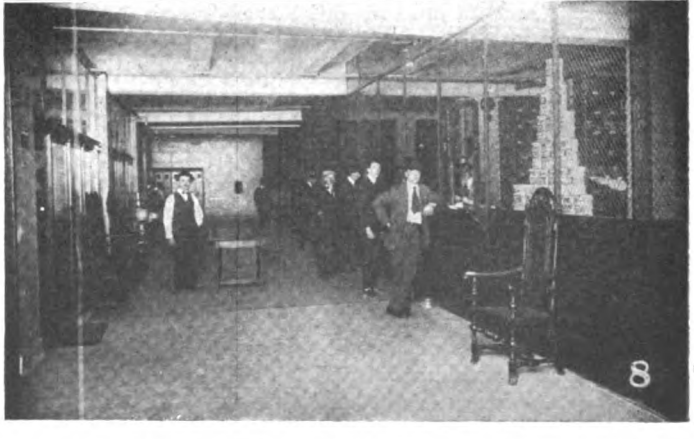






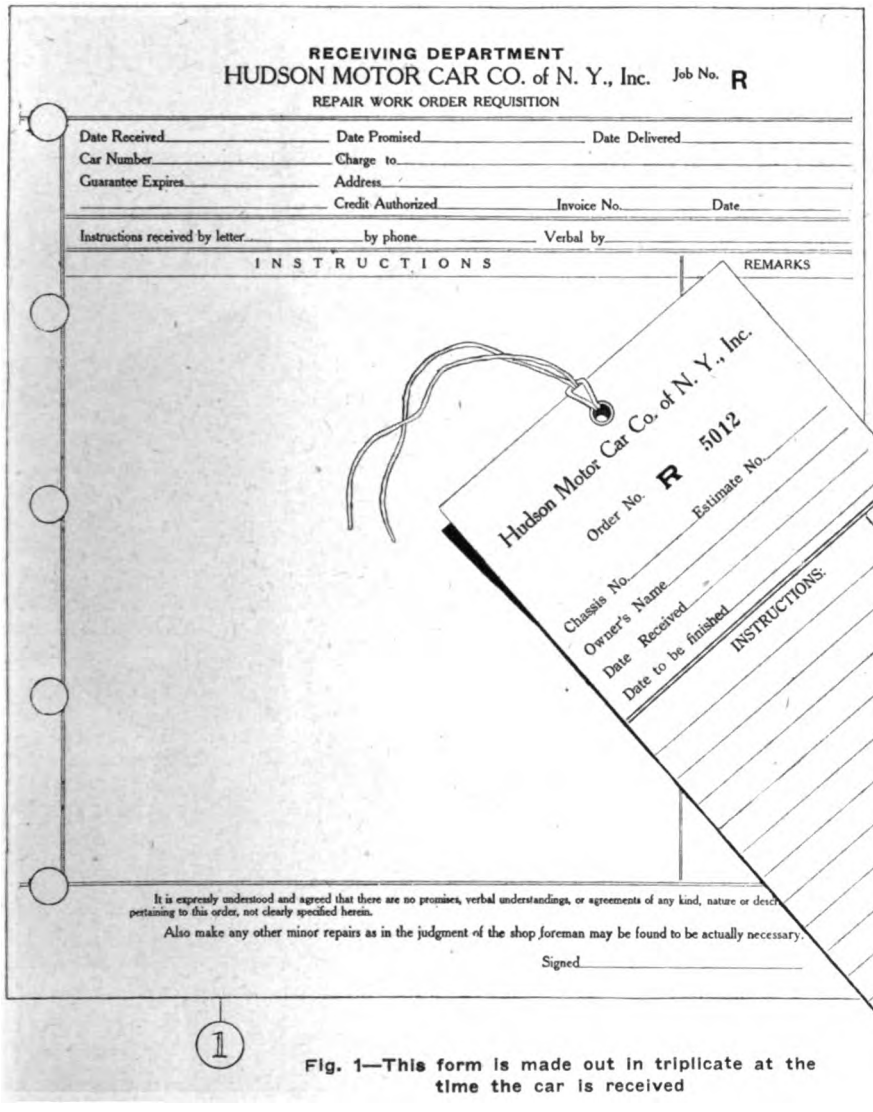






1—The machine shop, on the sixth floor, is well equipped. 2—Even the tank room on the roof has been converted into a metal shop. 3—All finished cars are stored in the basement. 4—This is the office on the first floor, where all cars are received. 5—Repair alley, on the sixth floor. All heavy repairs are done here. 6—The light repair department on the third floor. 7—A portion of the paint shop on the fourth floor. 8—The customers' corridor, between the stock room and the offices, on the second floor

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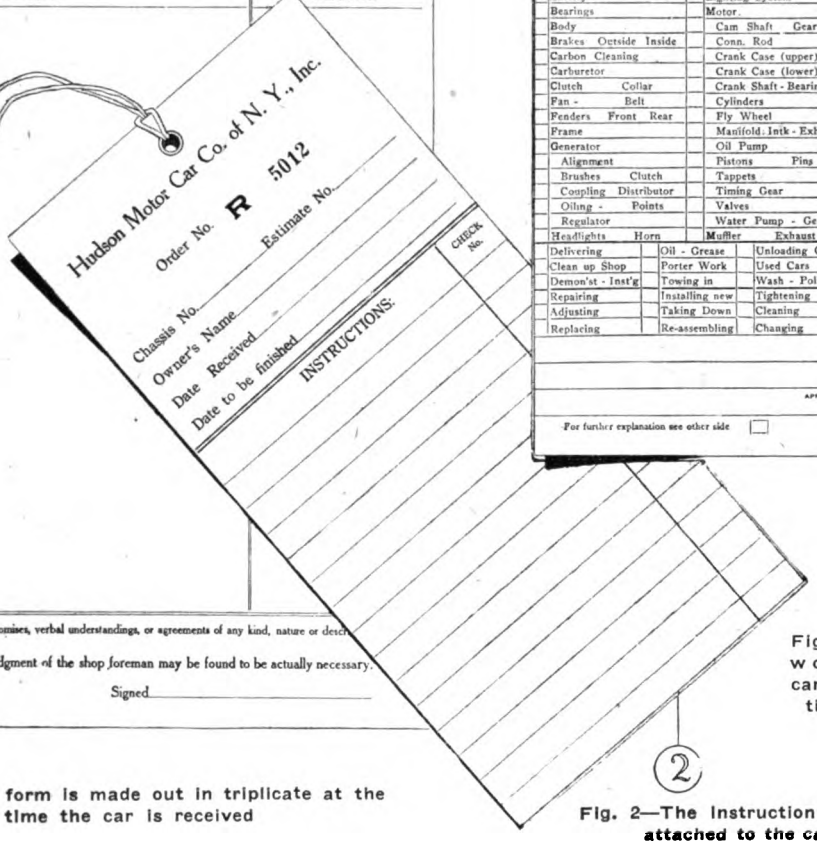
RECEIVING DEPARTMENT
HUDSON MOTOR CAR CO. of N. Y., Inc. Job No. R
REPAIR WORK ORDER REQUISITION

Date Received ____ Date Promised ____ Date Delivered ____
Car Number ____ Charge to ____
Guarantee Expires ____ Address ____
Credit Authorized ____ Invoice No. ____ Date ____
Instructions received by letter ____ by phone ____ Verbal by ____

INSTRUCTIONS | REMARKS

It is expressly understood and agreed that there are no promises, verbal understandings, or agreements of any kind, nature or descr pertaining to this order, not clearly specified herein.
Also make any other minor repairs as in the judgment of the shop foreman may be found to be actually necessary.
Signed ____

Fig. 1—This form is made out in triplicate at the time the car is received



Hudson Motor Car Co. of N. Y., Inc.
Order No. R 5012 Estimate No.
Chassis No.
Owner's Name
Date Received
Date to be finished
INSTRUCTIONS:
CHECK No.

Fig. 2—The instruction card is attached to the car



STARTED | FINISHED

OWNER | LICENSE | EMPLOYE

TIME | RATE $ | COST $ | JOB NO. | NUMBER | SERVICE OR CHARGE

Axles: Front Rear	Ignition	Pans
Differential Gear	Instruments (Cowl)	Propeller Shaft
Housing	License Brackets	Radiator
Battery	Lighting System	Rims
Bearings	Motor	Running Board
Body	Cam Shaft Gear	Spark Plugs
Brakes Outside Inside	Conn. Rod	Splash Guards
Carbon Cleaning	Crank Case (upper)	Springs: Front - Rear
Carburetor	Crank Case (lower)	Shackle Bolts
Clutch Collar	Crank Shaft - Bearings	Steering Gear
Fan - Belt	Cylinders	Steering Column
Fenders Front Rear	Fly Wheel	Tank
Frame	Manifold: Intk - Exhaust	Tie Rod
Generator	Oil Pump	Tires
Alignment	Pistons Pins	Top
Brushes Clutch	Tappets	Transmission
Coupling Distributor	Timing Gear	Trunk Rack
Oiling - Points	Valves	Universal Joints
Regulator	Water Pump - Gear	Wheels (Front - Rear)
Headlights Horn	Muffler Exhaust	Windshield

Delivering	Oil - Grease	Unloading Cars	
Clean up Shop	Porter Work	Used Cars	
Demon'st - Inst'g	Towing in	Wash - Polish	
Repairing	Installing new	Tightening	Testing - Grinding In
Adjusting	Taking Down	Cleaning	Straightening
Replacing	Re-assembling	Changing	Inspecting

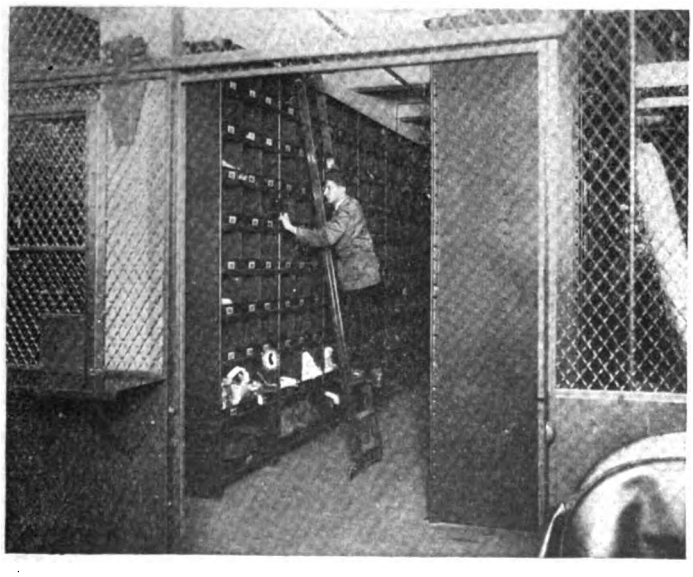
APPROVED

For further explanation see other side ☐

Fig. 3—This is the workman's time card, and is exceptionally compact

One complete power plant for each Hudson model is on hand at all times for just such emergencies. If it had been a transmission, a differential or a.rear axle, or practically any part of the car, the result would have been the same.

To give an idea of the capacity of the station, on rush days fifty to sixty jobs are often turned out from 8 a. m. to 11 a. m.; that is, one job every 3 min. This means modern equipment, expert workmen and a good system. But most of all, it means efficient and intelligent management, coupled with team work. The "why" of it is simple—it lies in the slogan, "As long as he is our customer let us give him every possible attention, courtesy and service."



A view of the stockroom on the second floor. It is separated from the corridor by a wire partition, and no one admitted without reason. The stock is kept in steel bins, completely indexed, and accessible by means of rolling ladders

Grant to Make 75 Cars a Day

CLEVELAND, Dec. 22—The Grant Motor Car Corp., formerly of Findlay, Ohio, is now occupying its new plant in this city, and is making deliveries of its product from these quarters. More than $1,000,000 worth of parts are in stock, and the company plans, with its added facilities, to turn out 75 cars per day, an annnual production of 20,000 cars.

Not Racine Auto Tire Co.

A story in the Dec 13 issue of MOTOR WORLD about the purchase of the Racine Rubber Co. by the Ajax Rubber Co. seems to have been misleading in that several people believe it is the Racine Auto Tire Co., Racine, Wis., that was purchased. While both companies are in the same town, the Racine Rubber Co., it is not the Racine Auto Tire Co.

Monitor Plans 3000 Car Output

COLUMBUS, OHIO, Dec. 29—Arrangements have been made by the Monitor Motor Car Co. to produce 3000 cars during the coming year, and the plant in Mt. Vernon Avenue is being enlarged and equipped with that end in view.

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The seventeenth in a series showing

Dealers Who Have Made Good

A. M. ROBBINS, president of the Centaur Motor Co., Chicago, was born in October, 1878, in Lowell, Mass., the son of a cotton manufacturer. In youth he became rather well known as an amateur bicycle rider. The sport fascinated him so much he paid little heed to his father's invitation for him to enter the cotton business. Indeed, when the elder Robbins pressed matters, the son "lit out" for points West.

He landed in Chicago in 1901, and soon connected with the American Bicycle Co. After a year he was picked by Dan Gould for a job on the road. At the end of three years traveling over the territory between Washington, D. C., and Cuba, he was recalled and detailed to the retail automobile sales department in Wells Street.

The first cars Robbins—his friends call him "Bobby"—helped to sell were the Pope-Tribune and the Pope-Hartford, one- and two-cylinder models. He sold those from June until November, 1904, and then he wrote a letter to all the motor car companies, applying for a job. He landed one with the Franklin company. He stayed with the Franklin people until February, 1907, and then migrated to New York as manager of the Aero Car branch.

When that concern went out of business, he returned to Chicago and took the branch managership of the Ranier. Later he became manager of the Centaur Motor Co. of Chicago, a branch of the Centaur Motor Co. of Buffalo, which sold the Oakland. When the Oakland was absorbed by General Motors, he bought out the branch and took on the Abbott-Detroit. That was in 1910. For three years he handled that line and then switched to Jeffery.

The first year with the Jeffery line he sold 250, the second year 500, the third year 800 and for the fourth year he has contracted for 1200 pleasure cars and 150 trucks.

Following are some of Bobby's success rules:

1. Don't let customers get out of your hands.
2. Don't promise or pretend to give anything for nothing.
3. Never overstate.
4. Be on the job always. Eight-fifteen finds Bobby at his office every morning.
5. Hire good men. Pay them well. Let them run their own departments without heckling.
6. Use a good departmentalized cost system.
7. Advertise in an original way.
8. Make sure that everything you are doing is profitable.
9. Maintain your prices.
10. Sell one car, and only one.
11. Make a science of selling used cars.



A. M. Robbins

Centaur Motor Co., Jeffery Chicago

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The Voice That Hurts

By Ray W. Sherman



REILLY and Tommy Trumbull were going through the Sayanna show. They had come over from Callawassa, where they sold the Sennett, to see a new body which the Sennett factory was bringing out in its home-town exhibition.

They had inspected this new body and agreed that it was a hummer—which settled the matter. Now they were ambling around, under the stairs and through the hallways, looking at the accessories and unfortunate car exhibits that drew backstairs spaces. Then this happened:

"HAVE YOU SEEN OUR NEW SPARK PLUG IT'S THE GREATEST THING OUT IT ALWAYS GIVES A HOT FAT SPARK IT HAS A SPARK SURFACE OF EXCEEDINGLY EXTENDED AREA AND AS THE SPARK LEAPS THE GAP IT IS A SHEET OF FLAME AND THE MIXTURE IS IGNITED EVERY TIME WITHOUT FAIL OTHER TYPES OF SPARK PLUG THAT HAVE ONLY A SMALL SPARKING SURFACE OFTEN FAIL TO SPARK AND CAUSE TROUBLE" AND SO ON AND SO ON AND SO ON, AND AFTER A WHILE THE YOUNG MAN RAN DOWN AND STOPPED FOR BREATH.

Reilly looked at the plug while the young man worked for wind.

"Not interested," he said, and they passed on.

"Great plug!" gasped the young man, as he pumped up for his next onslaught.

"Hasn't been selling very long," laughed Reilly, after they were out of hearing.

"He does look rather young," agreed Tommy.

"He talks young," asserted the Sennett dealer.

"Windy, you mean?"

"Poor tone," was Reilly's answer. "It's interesting to watch some of these salesmen kill their stories by using a poor tone of voice. There is just as much in how you say a thing as there is in the way you say it. This lad has the idea that is held by a great many beginners. He just winds up and runs down and almost chokes. While he's recovering his prospect gets away—mentally, if not physically."

Tommy smiled, perhaps at the recollection of the day when he jumped from high school into Reilly's salesroom and set out to revolutionize the world. The boss continued:

"There are all kinds of tone, Tommy. I wish I knew more about them. There is a name for every tone. Some day, when this World's Salesmanship Congress of ours gets into this science of selling with both feet, we may be able to get hold of data on this subject. As it is, we know from experience a few things and a lot that may or might be determined by science we don't know.

"I once heard a man talk on this tone business and I wish I could remember all he said. One thing that has always stayed by me is what he said about the tone that this young man used and that so many salesmen use when they are new in the business and some of them when they even are old-timers. I think this man called it the informative tone, or something like that, and he also spoke of pleading tones and a lot of other tones.

How It Acts

"This amateur-salesman tone is a high-pitched, never-drop, hit-you-in-the-face tone that seems to shoot right at you like water from a hose with the spray-nozzle on. It just buries you. It hurts your ears. It smothers you. It begins to bury you, and you shut your ears and your mind against it and wish the salesman would choke or do something else to put both you and him out of misery.

"Some beginners think the sole asset of a salesman is being able to talk. They speak of a certain man and say he'd make a good salesman because he's a good talker. Maybe he would and maybe he wouldn't. If he merely winds up his talker and lets it go he never would get anywhere.

"This high-pitched, ear-hurting tone never should be used. It is like that employed by barkers at side shows and by some of the men who sell fountain pens on the street corners. Why, Tommy, if you were going to try to sell me on the idea of giving you more money would you open up on me with a verbal spray and smother me with words? Indeed you wouldn't! You would use your persuasive powers and would handle your conversation in as salesman-like a way as you could.

Why Talk Unnaturally?

"If you talk with someone you know you do not distort your voice, so why should you let this inclination to distort get the best of you when you are talking to someone you never have seen until this minute. One's natural tone is best if the natural tone isn't a bad tone. If it is bad it is well to get a new one.

"Unnatural tones lack sincerity. The man who makes a stump speech has to use a different voice, because he couldn't be heard far if he talked naturally; but no prospect or show-goer likes to be talked at as if he were a stump audience."

Just then they passed another exhibit where a salesman—not as young as he once was—had opened up on a passer-by with another of these showers of words, all in the same tone, each like the other in sound and volume and all falling uselessly upon the ears of the listener.

"Like hailstones on a tin roof," said Tommy: "lots of racket—and then they all go into the rain-barrel."

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Specifications of 1917 Motor Cars

Listing 133 Makes of Cars and

ON these pages and the six that follow there will be found complete specifications of practically all makes and models of cars produced by American makers. In some instances a model is omitted, and this is because particulars concerning it have not yet been made public by the maker, and will not be divulged until the opening of the New York show.

The specifications are supplied direct by the car makers. Especially prepared printed forms are sent to every maker, with the request that he give all this detail information regarding his products. From these sheets the tabulation is prepared.

The information in this tabulation should be of inestimable value to the dealer, the garageman and the repairman:

(1) To the dealer because it gives him in concise form the specifications of all recognized makes from which to make comparisons with the line he is selling; to check up construction of the various lines; as a reference work; and to furnish detail information to prospects who may require it concerning the make of various car components, etc.

(2) To the garageman it should be valuable for much the same reasons; furthermore, it gives him many important dimensions which are useful in the

MAKE AND MODEL	No. of Cylinders	Bore and Stroke Inches	Piston Displacement, Cubic Inches	Gear Ratio on Direct	Make of Engine	Cylinder Shape	Cam-shaft Drive	Water Circu-lation	LUBRICATION		ELECTRIC SYSTEM		IGNITION			CARBURETION	
									System	Type of Pump	Generator Make	Voltage	System	Make	Control	Make of Carbureter	Fuel Feed
Abbott.....6-44	6	3½x4½	224.0	4.75-1	Continent..	L	Helical..	Cent....	Splash-Pres....	Piston....	Remy.....	6	Single...	Remy.....	Hand...	Stromberg...	Vacuum.....
Aland.....14-60	4	3 x5½	155.5	4.33-1	Own.....	I	Bevel...	Ther....	Pressure.....	Gear.....	U.S.L.....	12	Single...	Eisemann....	Hand...	Zenith.....	Vacuum.....
Allen.....Classic	4	3½x5	220.9	4.00-1	Own.....	L	Helical..	Ther....	Circ-Spl.....	Piston....	Westinghouse	6	Single...	Westinghouse	Hand...	Stromberg...	Vacuum.....
American.....A	6	3 x5	212.0	4.42-1	Amco.....	L	Helical..	Cent....	Circ-Spl.....	Piston....	G&D.....	6	Single...	G&D.....	Hand...	Zenith.....	Carter.....
Ams-Sterling.....	4	3½x4½	138.1	4.25-1	LeRoi.....	L	Helical..	Ther....	Splash-Pres....	Piston....	Bosch.....	12	Single...	Bosch.....	Hand...	Stromberg...	Gravity.....
Anderson.....6-40	6	3½x4½	224.0	4.42-1	Continent..	L	Helical..	Cent....	Splash-Pres....	Piston....	Westinghouse	6	Single...	Westinghouse	Hand...	Own.....	Gravity.....
Apperson Roadaplane...6-17	6	3½x5	288.6	4.25-1	Own.....	L	Helical..	Cent....	Pressure.....	Gear.....	Bijur.....	6	Dual....	Remy.....	Hand...	Rayfield.....	Vacuum.....
Apperson Roadaplane...8-17	8	3½x5	306.8	4.64-1	Own.....	L	Helical..	Ther....	Pressure.....	Gear.....	Bijur.....	6	Dual....	Remy.....	Hand...	Rayfield.....	Vacuum.....
Arbenz.....25	4	3½x5	165.9	4.25-1	Lycoming..	L	Helical..	Ther....	Splash.....	Piston....	Apco.....	6	Single...	Apco.....	Hand...	Carter.....	Gravity.....
Auburn.....6-39	6	3½x5	230.1	4.42-1	Teetor....	L	Helical..	Cent....	Circ-Spl.....	Piston....	Remy.....	6	Single...	Remy.....	Hand...	Rayfield.....	Vacuum.....
Auburn.....6-44	6	3½x5½	303.1	4.00-1	Continent..	L	Helical..	Cent....	Circ-Spl.....	Piston....	Delco.....	6	Single...	Delco.....	H&A....	Rayfield.....	Vacuum.....
Austin Highway King.....	12	2⅞x5	389.5	3.75-1	Weidely...	I	Helical..	Cent....	Pressure.....	Gear.....	Delco.....	6	Single...	Delco.....	Hand...	Stromberg ..	Vacuum.....
Bell.....17	4	3½x5	192.4	4.25-1	Lycoming..	L	Helical..	Ther....	Circ-Spl.....	Piston....	G&D.....	6	Single...	At Kent.....	Hand...	Carter.....	Vacuum.....
Biddle.....D	4	3½x5½	226.4	4.00-1	Special....	L	Helical..	Ther....	Circ-Spl.....	Gear.....	G&D.....	6	Single...	.....	Hand...	Zenith.....	Vacuum.....
Bour-Davis.....	6	3½x4½	224.0	4.42-1	Continent..	L	Spur....	Cent....	Splash-Pres....	Piston....	G&D.....	6	Single...	G&D.....	Hand...	Stromberg...	Vacuum.....
Brewster-Knight.....	4	4 x5½	276.5	4.50-1	Own.....	I	Chain...	Cent....	Pressure.....	Gear.....	U.S.L.....	12	Single...	Bosch.....	Hand...	Zenith.....	Vacuum.....
Briscoe.....BA-24	4	3⅛x5½	163.5	4.23-1	Own.....	L	Helical..	Ther....	Circ-Spl.....	Piston....	Splitdorf....	6	Single...	Conn.....	Hand...	.....	Gravity.....
Buick.....D-34, D-35	4	3½x4½	170.0	4.08-1	Own.....	I	Helical..	Cent....	Circ-Spl.....	Piston....	Delco.....	6	Single...	Delco.....	Hand...	Marvel.....	Vacuum.....
Buick D-44, D-45, D-46, D-47	6	3½x4½	224.0	4.08-1	Own.....	I	Helical..	Cent....	Circ-Spl.....	Gear.....	Delco.....	6	Single...	Delco.....	H&A....	Marvel.....	Vacuum.....
Cadillac.....55	8	3½x5½	314.4	4.37-1	Own.....	L	Chain...	Cent....	Pressure.....	Gear.....	Delco.....	6	Single...	Delco.....	Atmtc...	Own.....	Pressure.....
Cameron.....	6	3 x5	212.0	4.00-1	Amco.....	L	Helical..	Cent....	Splash-Pres....	Piston....	G&D.....	6	Single...	G&D.....	Hand...	Zenith.....	Vacuum.....
Case.....T-17	4	3¾x6	247.7	4.40-1	Own.....	L	Helical..	Ther....	Pressure.....	Piston....	Auto-Lite....	6	Single...	Conn.....	Hand...	Rayfield.....	Gravity.....
Chalmers.....6-30	6	3½x4½	224.0	4.75-1	Own.....	L	Helical..	Ther....	Splash-Pres....	Gear.....	Westinghouse	6	Single...	Remy.....	Hand...	Stromberg...	Vacuum.....
Chalmers.....6-30	6	3½x4½	224.0	5.18-1	Own.....	L	Helical..	Ther....	Splash-Pres....	Gear.....	Westinghouse	6	Single...	Remy.....	Hand...	Stromberg...	Vacuum.....
Chandler.....17	6	3⅜x5	268.4	3.40-1	Own.....	I	Chain...	Cent....	Circ-Spl.....	Piston....	G&D.....	6	Single...	Bosch.....	Hand...	Rayfield.....	Vacuum.....
Charter Oak.....A	6	4 x5½	414.7	3.77-1	Hersh-Sp..	T	Spur....	Cent....	Pressure.....	Gear.....	Westinghouse	6	Double-.	Bosch.....	Hand...	Rayfield.....	Gravity.....
Chevrolet.....490	4	3½x4	170.9	3.67-1	Own.....	I	Helical..	Ther....	Splash-Pres....	Piston....	Auto-Lite....	6	Single...	Conn.....	Hand...	Zenith.....	Gravity.....
Chevrolet.....F-5, F-2	4	3½x4	17 .9	4.25-1	Own.....	I	Helical..	Ther....	Splash-Pres....	Piston....	Auto-Lite....	6	Single...	Conn.....	Hand...	Zenith.....	Vacuum.....
Chevrolet.....D	8	3¾x4	286.3	4.25-1	Own.....	I	Helical..	Cent....	Circ-Spl.....	Piston....	Auto-Lite....	6	Single...	Conn.....	Hand...	.....	Vacuum.....
Cole.....8-60	8	3½x4½	346.3	4.45-1	Northway.	L	Spur....	Cent....	Pressure.....	Gear.....	Delco.....	6	Double-.	Delco.....	H&A...	Stromberg...	Vacuum.....
Crow-Elkhart.....CE-35	4	3½x5	192.4	4.25-1	Lycoming..	L	Helical..	Ther....	Circ-Spl.....	Piston....	Dyneto.....	6	Single...	Conn.....	Hand...	Zenith.....	Gravity.....

ABBREVIATIONS:—**Make of Engine:** Continental, Continent; Herschell-Spillman, Hersh-Sp; Golden, Belknap & Swartz, G.B.&S.; Massnick-Phipps, Mass-Ph. **Cylinder Shape:** L-Head, L; I-Head, I; T-Head, T. **Camshaft Drive:** Spur Gears, Spur. **Water Circulation:** Centrifugal, Cent; Thermo-syphon, Ther. **Lubrication System:** Splash-Pressure, Splash-Pres; Circulating-Splash, Circ-Spl. **Oil Pump Type:** Impeller, Imp. **Electric System:** Ward Leonard, Ward-L; Gray & Davis, G & D; Allis-Chalmers, Allis-Ch; Leece-Neville, Leece-N. **Ignition System:** Dual-Double, Dual-D. **Ignition Make:** At-water Kent, At Kent. **Ignition Control:** Hand and Automatic, H&A; Automatic, Atmtc. **Make of Carbureter:** Reichenbach, Reichbch; Longuemare, Longmare. **Clutch Type:** Multiple Disk, Mul-D. **Gearset Type:** Selective, Sel; Planetary, Plan; Friction, Fric. **Gearset Location:** Unit with Motor, Unit M; Unit with Axle, Unit X; Amidship, Amid; Unit with Torque Tube, Unit T. **Final Drive:** Spira

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Tabulated for Ready Reference

188 Different Chassis Models

fitting of various accessories and the making of repairs and replacements.

(3) To the repairman because it gives him an authentic guide concerning the construction of cars that may come to him for repair; size of bearings, makers of various accessories, dimensions, etc.

In short, the tabulation is designed to be a great reference work. It is intended to be the constant companion of all members of the retail motor-car trade.

No prices are given, but to those who require prices we refer to Motor World Guide, which appears every week in MOTOR WORLD, and always occupies the last two pages of text. This is corrected and brought up to date every week, and includes all changes in construction, prices, etc., which are made by all makers week by week.

The tables give the products of 133 different makers, and in all there are 188 different chassis models listed.

The arrangement of the tables has been given careful thought, and a logical sequence for the data chosen. Thus, for example, we start with the power plant, continue through the transmission elements, including clutch, gearset and axles, to the running gear, brakes, controls, bearings and equipment.

TRANSMISSION									RUNNING GEAR						BEARINGS				
	GEARSET									TIRES									
Clutch Type	Type	Location	Forward Sp'ds	Final Drive	Car Drives Through	Rear Axle Type	Make of Rear Axle	Torque Taken By	Wheelbase	Front	Rear	Wheels	Rear Springs	Make of Speedometer	Crankshaft Bearings	Number	Gearset	Rear Axle	Front Wheel	MAKE AND MODEL
Plate	Sel	Unit M.	3	Sp.B	Springs	¾ Float	Salisbury	Springs	122	32x4	32x4	Wood	S-E	Stewart	Plain	3	Ball	Roll.	Roll.	Abbott-6-44
Disk	Sel	Unit M.	3	Sp.B	Springs	Semi-F	Timken	Springs	122	33x4	33x4	Wire	S-E	VanSicklen	Plain	3	Ball	Roll.	Ball	Aland-14-60
Cone	Sel	Unit M.	3	Bevel	Springs	Float	Adams	Tor.T	112	32x3½	32x3½	Wood	S-E	Stewart	Plain	2	B&P	Ball	Ball	Allen-Classic
Plate	Sel	Unit M.	3	Sp.B	Springs	¾ Float	Salisbury	Springs	122	32x4	32x4	Wood	S-E	VanSicklen	Plain	3	B&P	B&R	Ball	American-A
Plate	Sel	Unit M.	3	Bevel	Springs	Semi-F	Special	Springs	110	30x3½	30x3½	Wood	S-E	Warner	Plain	...	Roll	Roll	Ball	Ams-Sterling
Plate	Sel	Unit M.	3	Bevel	Springs	Semi-F	Mott	Springs	120	33x4	33x4	Wood	S-E	Stewart	Plain	3	Ball	Ball	Ball	Andersen-6-40
Plate	Sel	Amid	.....	Sp.B	Springs	Float	Own	Springs	130	34x4	34x4	Wood	¾ Ell	VanSicklen	Plain	4	Roll	Roll	Roll	Apperson Roadaplane-6-17
Plate	Sel	Amid	3	Sp.B	Springs	Float	Own	Springs	130	35x4½	35x4½	Wood	¾ Ell	VanSicklen	Plain	3	Roll	Roll	Roll	Apperson Roadaplane-8-17
Cone	Sel	Unit M.	3	Bevel	Springs	Float	Gemco	.....	108	30x3½	30x3½	Wood	Cant	Carter	Plain	2	Ball	Roll	Ball	Arbenz-25
Plate	Sel	Unit M.	3	Sp.B	Springs	¾ Float	Columbia	Tor.T	120	34x4	34x4	Wood	S-E	.....	Plain	3	B&P	Roll	Ball	Auburn-6-39
Plate	Sel	Unit M.	.....	Sp.B	Springs	¾ Float	Columbia	Tor.T	131	35x4½	35x4½	Wood	Cant	.....	Plain	3	Ball	Roll	Ball	Auburn-6-44
Disk	Sel	Unit M.	6	Sp.B	Springs	Float	Own	Springs	142½	34x4½	34x4½	Wood*	Cant	Warner	Plain	4	Ball	B&R	Roll	Austin Highway King
Disk	Sel	Unit M.	3	Bevel	Springs	¾ Float	Adams	Springs	112	31x4	31x4	Wood	¾ Ell	Stewart	Plain	2	Roll	Roll	Ball	Bell-17
Plate	Sel	Unit M.	4	Bevel	Springs	¾ Float	Special	Springs	122	32x4	32x4	Wire	¾ Ell	Warner	Plain	3	Ball	B&R	Ball	Biddle-D
Plate	Sel	Unit M.	3	Sp.B	Springs	¾ Float	Salisbury	Springs	118	32x4	32x4	Opt	S-E	Warner	Plain	3	B&P	B&R	Ball	Bour-Davis
Cone	Sel	Unit-T	3	Sp.B	Tor.T	Float	Own	Tor.T	125	34x4½	34x4½	Wood	Cant	Stewart	Plain	3	Ball	Ball	Roll	Brewster-Knight
Cone	Sel	Unit X	3	Bevel	Springs	Semi-F	Own	Tor.R	105	30x3½	30x3½	Wood	Ell	Stewart	Plain	2	BR&P	B&R	Ball	Briscoe-BA-24
Cone	Sel	Unit M.	3	Bevel	Springs	¾ Float	West.M	Tor.T	106	31x4	31x4	Wood	S-E	Stewart	Plain	3	B&R	B&R	Ball	Buick-D-34, D-35
Cone	Sel	Unit M.	3	Sp.B	Tor.T	Float	West.M	Tor.T	115	34x4	34x4	Wood	Cant	Stewart	Plain	4	Ball	B&R	Ball	Buick D-44, D-45, D-46, D-47
Disk	Sel	Unit M.	3	Sp.B	Springs	Float	Timken	Tor.M	125	36x4½	36x4½	Wood	Plat	Warner	Plain	3	Ball	Roll	Roll	Cadillac-55
Plate	Sel	Unit X	3	Sp.B	Rad.Rd	¾ Float	Own	Tor.T	122	32x4	32x4	Wire	Cant	.....	Plain	3	Ball	Ball	Ball	Cameron
Cone	Sel	Unit M.	3	Sp.B	Tor.T	¾ Float	Salisbury	Tor.T	120	34x4	34x4	Wood	Cant	Stewart	Plain	3	R&P	Roll	Roll	Case-T-17
Plate	Sel	Unit M.	3	Sp.B	Springs	Semi-F	Timken	Springs	115	32x4	32x4	Wood	S-E	Stewart	Plain	3	Roll	Roll	Roll	Chalmers-6-30
Disk	Sel	Unit M.	3	Sp.B	Springs	Semi-F	Timken	Springs	122	34x4	34x4	Wood	S-E	Stewart	Plain	3	Roll	Roll	Roll	Chalmers-6-30
Disk	Sel	Unit M.	3	Sp.B	Tor.T	Float	Own	Tor.T	123	34x4	34x4	Wood	S-E	Warner	Plain	3	Ball	Ball	Roll	Chandler-17
Disk	Sel	Unit M.	4	Sp.B	Springs	Float	Timken	Tor.R	135	35x5	35x5	Wire†	S-E	.....	Plain	3	Roll	Roll	Roll	Charter Oak-A
Cone	Sel	Unit M.	3	Bevel	Springs	¾ Float	Own	Springs	102	30x3½	30x3½	Wood	Cant	Stewart	Plain	3	Ball	Roll	Ball	Chevrolet-490
Cone	Sel	Unit M.	3	Bevel	Springs	¾ Float	Own	Springs	112	32x3½	32x3½	Wood	Cant	Stewart	Plain	3	B&P	Roll	C&C	Chevrolet-F-5, F-2
Cone	Sel	Unit M.	3	Sp.B	Springs	¾ Float	Own	Tor.T	120	34x4	34x4	Wood	Cant	Stewart	Plain	3	B&P	Roll	C&C	Chevrolet-D
Cone	Sel	Unit M.	3	Sp.B	Springs	Float	Columbia	Springs	127	35x4½	35x4½	Wood	S-E	Warner	Plain	3	B&P	Roll	Roll	Cole-860
Plate	Sel	Unit X	3	Bevel	Tor. T	Float	Peru	Tor.T	113	32x3½	32x3½	Opt	¾ Ell	Stewart	Plain	2	Ball	Roll	Ball	Crew-Elkhart-CE-35

Bevel, Sp.B. **Car Drives Through:** Radius Rods, Rad.Rd; Torsion Tube, Tor.T; Torque Arm, Tor. A. **Rear Axle:** Floating, Float; Semi-Floating, Semi-F; Three-quarter Floating, ¾ Float. **Make of Axle:** Weston-Mott, West.M; Walker-Weiss, W.Weiss. **Rear Springs:** Elliptic, Ell; Three-quarter Elliptic ¾ Ell; Semi-Elliptic, S-E; Cantilever, Cant; Platform, Plat; Transverse Semi-Elliptic, Tr.S-E. **Bearings:** Roller, Roll; Ball and Roller, B&R; Ball and Plain, B&P; Ball, Roller and Plain, BR&P; Cup and Cone, C&C. **Make of Speedometer:** Johns-Manville, Johns-Man. **Fuel Feed;** Stewart Vacuum Tank, Vacuum.

*Wire special equipment. †Wood optional.

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1917 Motor Cars Listed with

MAKE AND MODEL	No. of Cylinders	Bore and Stroke, Inches	Piston Displacement Cubic Inches	Gear Ratio on Direct	Make of Engine	Cylinder Shape	Camshaft Drive	Water Circulation	LUBRICATION		ELECTRIC SYSTEM		IGNITION			CARBURETION	
									System	Type of Pump	Generator Make	Voltage	System	Make	Control	Make of Carbureter	Fuel Feed
Cunningham.....V	8	3½x5	441.7	4.08-1	Own.....	L	Helical..	Cent....	Pressure.....	Gear.....	Westinghouse	6	Single...	Westinghouse	Hand...	Stromberg...	Vacuum.....
Daniels.....A	8	3½x5	331.8	4.42-1	Hersh-Sp..	L	Helical..	Cent....	Pressure.....	Gear.....	Westinghouse	6	Single...	Westinghouse	Hand...	Zenith.....	Vacuum.....
Davis.....Light Six	6	3½x4½	224.0	4.42-1	Continent..	L	Helical..	Cent....	Splash-Pres....	Piston....	Delco.....	6	Dual....	Delco.....	Hand...	Stromberg...	Vacuum.....
Davis.....Big Six	6	3½x5½	303.1	4.42-1	Continent..	L	Helical..	Cent....	Splash-Pres....	Gear.....	Delco.....	6	Dual....	Delco.....	Atmto...	Stromberg...	Vacuum.....
Detroiter.....Six-45	6	3½x4½	224.0	4.75-1	Continent..	L	Helical..	Cent....	Splash-Pres....	Piston....	Auto-Lite....	7	Single...	Conn.....	Hand...	Ball.....	Vacuum.....
Dispatch.....G	4	3½x5	220.9	4.00-1	Wisconsin..	L	Helical..	Ther....	Pressure.....	Gear.....	U.S.L.....	12	Single...	Bosch.....	Hand...	Rayfield.....	Vacuum.....
Dixie Flyer.....	4	3½x5	165.9	4.75-1	Lycoming..	L	Helical..	Ther....	Circ-Spl.....	Piston....	Dyneto.....	6	Single...	Conn.....	Hand...	Carter.....	Vacuum.....
Dodge.....	4	3⅞x4½	212.3	3.50-1	Own.....	L	Helical..	Cent....	Circ-Spl.....	Imp.....	North East..	12	Single...	Delco.....	Atmto...	Stewart.....	Vacuum.....
Derris.....1-B-6	6	4 x5	377.0	4.08-1	Own.....	I	Helical..	Cent....	Pressure.....	Gear.....	Westinghouse	6	Single...	Bosch.....	Hand...	Stromberg...	Vacuum.....
Dort.....9	4	3½x5	165.9	4.07-1	Own.....	L	Helical..	Ther....	Circ-Spl.....	Piston....	Westinghouse	6	Single...	Conn.....	Hand...	Carter.....	Gravity.....
Drexel.....R-30-35	4	3½x5	192.4	4.25-1	Own.....	I	Chain...	Ther....	Circ-Spl.....	Piston....	Bijur.....	6	Single...	Bosch.....	Hand...	Stromberg...	Gravity.....
Drexel.....	4	3½x5	192.4	4.42-1	Own.....	I	Chain...	Ther....	Splash-Pres....	Piston....	Bijur.....	6	Single...	Bosch.....	Hand...	Stromberg...	Vacuum.....
Drummond.....B-17	8	3 x5	282.7	4.42-1	Hersh-Sp..	L	Helical..	Cent....	Pressure.....	Gear.....	Westinghouse	6	Single...	Westinghouse	Hand...	Zenith.....	Vacuum.....
Elcar.....D.E.F.	4	3½x5	192.4	4.08-1	Lycoming..	L	Helical..	Ther....	Circ-Spl.....	Piston....	Dyneto.....	6	Single...	Delco.....	H&A....	Carter.....	Vacuum.....
Elgin.....	6	3 x4½	180.2	4.50-1	Falls.....	I	Helical..	Ther....	Circ-Spl.....	Piston....	Wagner.....	6	Single...	Remy.....	Hand...	Stromberg...	Vacuum.....
Emerson.....	4	3½x4	176.7	4.25-1	Own.....	L	Spur....	Ther....	Non-Splash....	Gear.....	Apple.....	6	Single...	At Kent.....	Hand...	Kingston....	Vacuum.....
Empire.....45	4	3½x5	235.8	4.00-1	Teetor....	T	Helical..	Ther....	Circ-Spl.....	.....	Auto-Lite....	6	Single...	Auto-Lite....	Hand...	Stromberg...	Vacuum.....
Empire.....60-R	6	3½x4½	224.0	4.42-1	Continent..	L	Helical..	Cent....	Splash-Pres....	Piston....	Auto-Lite....	6	Single...	Conn.....	Hand...	Stromberg...	Vacuum.....
Empire.....70	6	3½x4½	224.0	4.58-1	Continent..	L	Helical..	Cent....	Splash-Pres....	.....	Auto-Lite....	6	Single...	Conn.....	Hand...	Stromberg...	Vacuum.....
Enger.....Twin Unit Twelve	12	2½x3½	238.3	4.75-1	Own.....	I	Chain...	Gear....	Pressure.....	Gear.....	Westinghouse	6	Single...	Remy.....	Hand...	Stromberg...	Gravity.....
Fiat.....55-E-17	4	5½x6½	557.0	2.75-1	Own.....	L	Helical..	Cent....	Pressure.....	Gear.....	Westinghouse	6	Double..	Westinghouse	Hand...	Zenith.....	Pressure.....
Ford.....T	4	3¾x4	176.7	3.63-1	Own.....	L	Spur....	Ther....	Splash-Grav...	Flywheel..	Own.....	12	Single...	Own.....	Hand...	{Holley.. / Kingston}	Gravity.....
Franklin.....9	6	3½x4	199.1	3.92-1	Own.....	I	Helical..	Air.....	Pressure.....	Gear.....	Dyneto.....	12	Single...	At Kent.....	Atmto...	Own.....	Vacuum.....
F.R.P.....45-A	4	4½x6½	448.0	2.25-1	Own.....	I	Worm...	Cent....	Splash-Pres....	Piston....	Bosch.....	12	2-Pt....	Bosch.....	Hand...	Longmare...	Pressure.....
F.R.P.....45-B	4	4½x6½	448.0	3.00-1	Own.....	I	Worm...	Cent....	Splash-Pres....	Piston....	Bosch.....	12	2-Pt....	Bosch.....	Hand...	Longmare...	Pressure.....
Geneva.....	6	4 x5½	414.7	3.77-1	Hersh-Sp..	T	Helical..	Cent....	Splash-Pres....	Gear.....	Westinghouse	6	Single...	Eisemann....	Hand...	Rayfield.....	Vacuum.....
Glide.....6-40	6	3½x5	230.1	4.64-1	Rutenber..	L	Helical..	Cent....	Splash-Pres....	Piston....	Westinghouse	6	Single...	Westinghouse	Hand...	Rayfield.....	Vacuum.....
Grant.....K	6	3 x4½	180.2	4.50-1	Own.....	I	Helical..	Ther....	Non-Splash....	Piston....	Wagner.....	6	Single...	Remy.....	Atmto...	Stromberg...	Vacuum.....
Hackett Four.....	4	3½x4½	187.7	4.00-1	G.B.&S...	L	Chain...	Ther....	Splash-Pres....	Piston....	G&D.....	6	Single...	G&D.....	Hand...	.....	Vacuum.....
HAL.....21A	12	2½x5	389.5	4.64-1	Weidely...	I	Helical..	Cent....	Pressure.....	Piston....	Westinghouse	6	Single...	Westinghouse	Hand...	Stromberg...	Vacuum.....
Harroun.....A-1	4	3½x5½	174.2	4.00-1	Own.....	L	Helical..	Ther....	Circ-Spl.....	Piston....	Own.....	6	Single...	Bosch.....	Hand...	Bell.....	Gravity.....
Hatfield.....H	4	3½x4½	187.7	4.25-1	G.B.&S...	L	Chain...	Ther....	Circ-Spl.....	Piston....	Disco.....	12	Single...	Conn.....	Hand...	Stromberg...	Vacuum.....
Harvard.....2-T	4	3 x4½	120.2	4.00-1	Sterling...	L	Helical..	Ther....	Circ-Spl.....	Gear.....	Wagner.....	6	Dual....	.....	Hand...	Zenith.....	Gravity.....
Haynes.....36	6	3½x5	288.6	4.42-1	Own.....	L	Helical..	Cent....	Circ-Spl.....	Piston....	Leece-N.....	6	Single...	Remy.....	Hand...	Rayfield.....	Vacuum.....
Haynes.....37	6	3½x5	288.6	4.42-1	Own.....	L	Helical..	Cent....	Circ-Spl.....	Piston....	Leece-N.....	6	Single...	Remy.....	Hand...	Rayfield.....	Vacuum.....
Haynes.....40	12	2½x5	356.4	4.42-1	Own.....	I	Chain...	Cent....	Pressure.....	Gear.....	Leece-N.....	6	Single...	Delco.....	H&A....	Rayfield.....	Vacuum.....
Haynes.....41	12	2½x5	356.4	4.42-1	Own.....	I	Chain...	Cent....	Pressure.....	Gear.....	Leece-N.....	6	Single...	Delco.....	H&A....	Rayfield.....	Vacuum.....
Hollier.....186	6	3 x4½	180.2	4.50-1	Falls.....	I	Helical..	Ther....	Circ-Spl.....	Gear.....	Allis-Ch.....	6	Single...	Remy.....	Hand...	Stewart.....	Vacuum.....
Hollier.....178	8	3 x4½	240.3	4.50-1	Own.....	I	Helical..	Ther....	Pressure.....	Gear.....	Aploo.....	6	Single...	At Kent.....	Atmto...	Stewart.....	Vacuum.....
Homer Laughlin.....D	8	2½x3½	120.0	.....	Own.....	L	Chain...	Ther....	Circ-Spl.....	.....	Disco.....	12	Single...	At Kent.....	Atmto...	Ensign.....	Pressure.....
Howard.....	6	3½x4½	224.0	4.75-1	Continent..	L	Helical..	Cent....	Splash-Pres....	Piston....	.....	6	Single...	Delco.....	Hand...	Stromberg...	Vacuum.....
Hudson Super-Six.....	6	3½x5	288.6	4.45-1	Own.....	L	Helical..	Cent....	Circ-Spl.....	Piston....	Delco.....	6	Single...	Delco.....	H&A....	Own.....	Vacuum.....
Hupmobile.....NR	4	3½x5½	242.9	4.64-1	Own.....	L	Chain...	Ther....	Splash-Pres....	Flywheel..	Westinghouse	6	Single...	At Kent.....	H&A....	Zenith.....	Gravity.....
Hupmobile.....NU	4	3½x5½	242.9	4.64-1	Own.....	L	Chain...	Ther....	Splash-Pres....	Flywheel..	Westinghouse	6	Single...	At Kent.....	H&A....	Zenith.....	Gravity.....
Hupmobile.....N	4	3½x5½	242.9	4.64-1	Own.....	L	Chain...	Ther....	Splash-Pres....	Flywheel..	Westinghouse	6	Single...	At Kent.....	H&A....	Zenith.....	Gravity.....
Hupmobile.....NQ	4	3½x5½	242.9	4.64-1	Own.....	L	Chain...	Ther....	Splash-Pres....	Flywheel..	Westinghouse	6	Single...	At Kent.....	H&A....	Zenith.....	Gravity.....
Inter-State.....T	4	3½x5	192.4	4.00-1	Own.....	L	Helical..	Ther....	Circ-Spl.....	Gear.....	Remy.....	6	Single...	Remy.....	Hand...	Schebler.....	Gravity.....
Jackson Wolverine.....349	8	3 x3½	197.9	4.75-1	Ferro.....	I	Helical..	Ther....	Pressure.....	Gear.....	Auto-Lite....	6	Single...	Auto-Lite....	Hand...	Zenith.....	Vacuum.....
Jeffery.....472	4	3½x5½	231.9	4.50-1	Own.....	L	Helical..	Cent....	Splash-Pres....	Piston....	Bijur.....	6	Single...	Dixie.....	Hand...	Stromberg...	Vacuum.....
Jeffery.....671	6	3½x4½	267.0	4.50-1	Own.....	L	Chain...	Cent....	Splash-Pres....	Gear.....	Bijur.....	6	Single...	Dixie.....	Hand...	Rayfield.....	Vacuum.....

ABBREVIATIONS:—**Make of Engine:** Continental, Continent; Herschell-Spillman, Hersh-Sp; Golden, Belknap & Swarts, G.B.&S.; Massnick-Phipps, Mass-Ph. **Cylinder Shape:** L-Head, L; I-Head, I; T-Head, T. **Camshaft Drive:** Spur Gears, Spur. **Water Circulation:** Centrifugal, Cent; Thermo-syphon, Ther. **Lubrication System:** Splash-Pressure, Splash-Pres; Circulating-Splash, Circ-Spl. **Oil Pump Type:** Impeller, Imp. **Electric System:** Ward Leonard, Ward-L; Gray & Davis, G & D; Allis-Chalmers, Allis-Ch; Leece-Neville, Leece-N. **Ignition System:** Dual-Double, Dual-D. **Ignition Make:** At-water Kent, At Kent. **Ignition Control:** Hand and Automatic, H&A; Automatic, Atmto. **Make of Carbureter:** Reichenbach, Relohbeh; Longuemare, Longmare. **Clutch Type:** Multiple Disk, Mul-D. **Gearset Type:** Selective, Sel; Planetary, Plan; Friction, Fric. **Gearset Location:** Unit with Motor, Unit M; Unit with Axle, Unit X; Amidship, Amid; Unit with Torque Tube, Unit T. **Final Drive:** Spiral

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Their Technical Specifications

Clutch Type	TRANSMISSION: GEARSET: Type	GEARSET: Location	GEARSET: Forward Sp'ds	Final Drive	Car Drives Through	Rear Axle Type	Make of Rear Axle	Torque Taken By	RUNNING GEAR: Wheelbase	TIRES: Front	TIRES: Rear	Wheels	Rear Springs	Make of Speedometer	Crankshaft Bearings: Number	BEARINGS: Gearset	BEARINGS: Rear Axle	BEARINGS: Front Wheel	MAKE AND MODEL
Disk..	Sel...	Unit M..	3	Sp.B....	Springs..	Float...	.....	Tor.T...	130	35x5	35x5	Wood...	¾ Ell....	Stewart.....	Plain.. 3	B&R....	.....	Roll...	Cunningham.....V
Disk..	Sel...	Unit M..	3	Sp.B....	Springs..	¾ Float..	Timken...	Tor.T...	127	34x4½	34x4½	Wood...	S-E.....	Warner.....	Plain.. 3	B&R....	Roll...	Roll...	Daniels.....A
Cone..	Sel...	Unit M..	3	Sp.B....	Springs..	¾ Float..	Columbia..	Springs..	118	34x4	34x4	Wood...	S-E.....	Stewart.....	Plain.. 3	Ball....	Roll...	Ball...	Davis.....Light Six
Cone..	Sel...	Unit M..	3	Sp.B....	Springs..	Float...	Columbia..	Springs..	124	34x4½	34x4½	Wood...	S-E.....	Stewart.....	Plain.. 3	Ball....	Roll...	Roll...	Davis.....Big Six
Plate..	Sel...	Unit M..	3	Sp.B....	Springs..	Semi-F..	Timken...	Springs..	118	33x4	33x4	Wood...	S-E.....	Stewart.....	Plain.. 3	B&P...	Roll...	Roll...	Detroiter.....Six-45
Control	Unit..	Amid...	4	Dbl Ch..	Rad.Rd.	Dead...	Own.....	Rad.Rd.	120	36x3½	36x3½	Wood...	Ell.....	Corbin.....	Plain.. 3	Ball....	Ball...	Ball..	Dispatch.....G
Cone..	Sel...	Unit M..	3	Sp.B....	Tor.T...	Float...	Peru.....	Tor.T...	112	32x3½	32x3½	Wood...	¾ Ell....	VanSicklen..	Plain.. 2	BR&P..	B&R..	Ball..	Dixie Flyer.....
Disk..	Sel...	Unit M..	3	Sp.B....	Springs..	Float...	Own.....	Tor.T...	114	32x3½	32x3½	Wood...	¾ Ell....	Johns-Man..	Plain.. 3	Ball....	Roll...	Roll...	Dodge.....
Disk..	Sel...	Unit M..	3	Sp.B....	Springs..	Float...	Timken...	Tor.T...	128	36x4½	36x4½	Wood...	S-E.....	Warner.....	Plain.. 7	Roll....	Roll...	Roll...	Derris.....1-B-6
Cone..	Sel...	Unit M..	3	Bevel...	Springs..	¾ Float..	W-Weiss...	Tor.T...	105	30x3½	30x3½	Wood...	Cant....	Stewart.....	Plain.. 2	Ball....	BR&P	Ball...	Dort.....9
Cone..	Sel...	Unit M..	3	Bevel...	Tor.T...	Float...	Peru.....	Tor.T...	112	33x4	33x4	Wood...	¾ Ell....	Stewart.....	Plain.. 2	Ball....	Roll...	Ball...	Drexel.....R-30-35
Disk..	Sel...	Unit M..	3	Sp.B....	Springs..	Semi-F..	Timken...	Springs..	118	34x4	34x4	Wood...	S-E.....	Stewart.....	Plain.. 2	Ball....	Roll...	Roll...	Drexel.....
Disk..	Sel...	Unit M..	3	Sp.B....	Tor.T...	Float...	Columbia..	Tor.T...	120	34x4	34x4	Wood...	Cant....	.....	Plain.. 3	Ball....	Roll...	Roll...	Drummond.....B-17
Plate..	Sel...	Unit M..	3	Sp.B....	Springs..	Float...	Salisbury..	Springs..	115	32x3½	32x3½	Opt.....	S-E.....	Stewart.....	Plain.. 2	B&P....	B&R..	Ball...	Elcar.....D.E.F.
Plate..	Sel...	Unit M..	3	Sp.B....	Springs..	Float...	Salisbury..	Tor.A...	116	33x4	33x4	Opt.....	Cant....	Stewart.....	Plain.. 3	Ball....	Ball...	Ball...	Elgin.....
Disk..	Sel...	Unit M..	3	Bevel...	Springs..	Semi-F..	Own.....	Springs..	110	30x3	30x3½	Wood...	S-E.....	Extra.....	Plain.. 3	Ball....	B&R..	Ball...	Emerson.....
Cone..	Sel...	Unit M..	3	Bevel...	Springs..	¾ Float..	West.M...	Tor.T...	116	33x4	33x4	Wood...	S-E.....	.....	Plain.. 3	B&P....	Roll...	Ball...	Empire.....45
Cone..	Sel...	Unit M..	3	Bevel...	Springs..	¾ Float..	West.M...	Springs..	120	34x4	34x4	Wood...	¾ Ell....	.....	Plain..	B&P....	Roll...	Ball...	Empire.....60-R
Plate..	Sel...	Unit M..	3	Sp.B....	Springs..	Float...	Hess.....	Springs..	120	34x4	34x4	Wood...	¾ Ell....	.....	Plain.. 3	B&P....	B&R..	Ball...	Empire.....70
Plate..	Sel...	Unit M..	3	Sp.B....	Springs..	Float...	Hess.....	Tor.T...	116	32x4	32x4	Wood...	Cant....	Stewart.....	Plain.. 3	B&P....	B&R..	Ball...	Enger.....Twin Unit Twelve
Disk..	Sel...	Amid...	4	Bevel...	Tor.T...	Semi-F..	Own.....	Tor.T...	140	35x5	35x5	Wood...	S-E.....	Warner.....	Plain.. 3	Ball....	Ball...	Ball...	Fiat.....55-E-17
Mul-D	Plan..	Unit M..	2	Bevel...	Tor.T...	Semi-F..	Own.....	Tor.T...	100	30x3	30x3½	Wood...	Tr.S-E..	None.....	Plain.. 3	Plain....	Roll...	Ball...	Ford.....T
Disk..	Sel...	Amid...	3	Sp.B....	Springs..	Semi-F..	Own.....	Springs..	115	32x4	32x4	Wood...	Ell.....	Warner.....	Plain.. 7	Ball....	Ball...	Ball...	Franklin.....9
Cone..	Sel...	Amid...	4	Bevel...	Springs..	Float...	Own.....	Tor.T...	110	36x4½	36x5	Wire....	S-E.....	.....	Plain.. 3	Ball....	Ball...	Ball...	F.R.P.....45-A
Cone..	Sel...	Amid...	4	Bevel...	Springs..	Float...	Own.....	Tor.T...	140	36x4½	36x5	Wire....	S-E.....	.....	Plain.. 3	Ball....	Ball...	Ball...	F.R.P.....45-B
Disk..	Sel...	Unit M..	4	Sp.B....	Springs..	Float...	Timken...	Springs..	139	34x4½	34x4½	Opt.....	S-E.....	Warner.....	Plain.. 3	Roll....	Roll...	Roll...	Geneva.....
Disk..	Sel...	Unit M..	3	Sp.B....	Springs..	¾ Float..	Amer.....	Springs..	119	34x4	34x4	Wood...	¾ Ell....	Stewart.....	Plain.. 3	B&P....	Ball...	Ball...	Glide.....6-40
Cone..	Sel...	Unit M..	3	Bevel...	Tor.T...	Float...	Peru.....	Tor.T...	112	32x3½	32x3½	Wood*	Cant....	Stewart.....	Plain.. 3	B&P....	B&R..	Ball...	Grant.....K
Disk..	Sel...	Unit M..	3	Bevel...	Springs..	¾ Float..	W-Weiss...	Springs..	112	31x4	31x4	Wood...	¾ Ell....	Stewart.....	Plain.. 3	Roll....	Roll...	Ball...	Hackett Four.....
Plate..	Sel...	Unit M..	3	Sp.B....	Springs..	Float...	Timken...	Springs..	135	34x4½	34x4½	Opt.....	S-E.....	.....	Plain.. 3	Ball....	Roll...	Roll...	HAL.....21A
Cone..	Sel...	Unit M..	3	Bevel...	Springs..	Float...	Own.....	Tor.T...	107	30x3½	30x3½	Wood...	Cant....	.....	Plain.. 3	Ball....	.....	Roll...	Havoom.....A-1
Disk..	Sel...	Unit M..	3	Bevel...	Springs..	Float...	Peru.....	Springs..	106	31x4	31x4	Wood...	Cant....	Stewart.....	Plain.. 3	Ball....	Roll...	Ball..	Hatfield.....H
Cone..	Sel...	Unit M..	3	Bevel...	Springs..	Semi-F..	Detroit....	Springs..	100	28x3	28x3	Opt.....	Cant....	.....	Plain.. ...	B&P....	B&R..	Ball...	Harvard.....2-T
Plate..	Sel...	Unit M..	3	Sp.B....	Springs..	¾ Float..	Own.....	Springs..	121	34x4	34x4	Wood...	S-E.....	Stewart.....	Plain.. 3	Ball....	Ball..	Ball...	Haynes.....36
Plate..	Sel...	Unit M..	3	Sp.B....	Springs..	¾ Float..	Own.....	Springs..	127	35x4½	35x4½	Wood...	S-E.....	Stewart.....	Plain.. 3	Ball....	Ball...	Ball...	Haynes.....37
Plate..	Sel...	Unit M..	3	Sp.B....	Springs..	¾ Float..	Own.....	Springs..	121	34x4½	34x4½	Wire....	S-E.....	Warner.....	Plain.. 3	Ball....	Ball...	Ball...	Haynes.....40
Plate..	Sel...	Unit M..	3	Sp.B....	Springs..	¾ Float..	Own.....	Springs..	127	34x4½	34x4½	Wire....	S-E.....	Warner.....	Plain.. 3	Ball....	Ball...	Ball...	Haynes.....41
Cone..	Sel...	Unit M..	3	Bevel...	Tor.T...	Float...	Own.....	Springs..	116	32x3½	32x3½	Wood...	Cant....	Stewart.....	Plain.. 3	Ball....	Ball...	Roll...	Hellier.....186
Cone..	Sel...	Unit M..	3	Bevel...	Tor.T...	Float...	Own.....	Springs..	116	34x4	34x4	Wood...	Cant....	Stewart.....	Plain.. 3	Ball....	Ball...	Roll...	Hellier.....178
.....	Fric...	Amid...	3	Dbl.Ch.	Rad.Rd.	Dead...	Own.....	.....	112	30x3½	30x3½	Wire....	Cant....	Stewart.....	Ball... 2	Ball....	Ball...	Ball...	Homer Laughlin.....D
Plate..	Sel...	Unit M..	3	Sp.B....	Springs..	Float...	Hess.....	Springs..	118	32x4	32x4	Opt.....	S-E.....	.....	Plain.. 3	Ball....	B&R..	Roll...	Heward.....
Disk..	Sel...	Unit M..	3	Sp.B....	Springs..	Semi-F..	Timken...	Springs..	125½	35x4½	35x4½	Wood*	S-E.....	Warner.....	Plain.. 4	R&P....	Roll...	Roll...	Hudson Super-Six.....
Disk..	Sel...	Unit M..	3	Sp.B....	Springs..	¾ Float..	Own.....	Springs..	119	34x4	34x4	Wood*	S-E.....	VanSicklen..	Plain.. 3	B&R....	Ball...	Roll...	Hupmobile.....NR
Disk..	Sel...	Unit M..	3	Sp.B....	Springs..	¾ Float..	Own.....	Springs..	134	35x4½	35x4½	Wood*	S-E.....	VanSicklen..	Plain.. 3	B&R....	Ball...	Roll...	Hupmobile.....NU
Disk..	Sel...	Unit M..	3	Sp.B....	Springs..	¾ Float..	Own.....	Springs..	119	34x4	34x4	Wood*	S-E.....	VanSicklen..	Plain.. 3	B&R....	Ball...	Roll...	Hupmobile.....N
Disk..	Sel...	Unit M..	3	Sp.B....	Springs..	¾ Float..	Own.....	Springs..	119	35x4½	35x4½	Wood*	S-E.....	VanSicklen..	Plain.. 3	B&R....	Ball...	Roll...	Hupmobile.....NQ
Cone..	Sel...	Unit X..	3	Bevel...	Tor.T...	¾ Float..	Peru.....	Tor.T...	110	33x4	33x4	Wood...	¾ Ell....	Stewart.....	Plain.. 3	BR&P..	B&R..	Ball...	Inter-State.....T
Plate..	Sel...	Unit M..	3	Bevel...	Springs..	¾ Float..	Salisbury..	Springs..	118	34x4	34x4	Wood...	Ell.....	.....	Plain..	Roll....	Roll..	B&C..	Jackson Wolverine.....349
Plate..	Sel...	Unit M..	3	Sp.B...	Springs..	Semi-F..	Own.....	Springs..	116	34x4	34x4	Wood...	¾ Ell....	.....	Plain.. 3	Roll....	Roll...	Roll...	Jeffery.....472
Plate..	Sel...	Unit M..	3	Sp.B....	Springs..	Semi-F..	Own.....	Springs..	125	34x4	34x4	Wood...	¾ Ell....	.....	Plain.. 3	Roll....	Roll...	Roll...	Jeffery.....671

Bevel, Sp.B. **Car Drives Through:** Radius Rods, Rad.Rd; Torsion Tube, Tor.T; Torque Arm, Tor. A. **Rear Axle:** Floating, Float; Semi-Floating, Semi-F; Three-quarter Floating, ¾ Float. **Make of Axle:** Weston-Mott, West.M; Walker-Weiss, W.Weiss. **Rear Springs:** Elliptic, Ell; Three-quarter Elliptic ¾ Ell; Semi-Elliptic, S-E; Cantilever, Cant; Platform, Plat; Transverse Semi-Elliptic, Tr.S-E. **Bearings:** Roller, Roll; Ball and Roller, B&R; Ball and Plain, B&P; Ball, Roller and Plain, BR&P; Cup and Cone, C&C. **Make of Speedometer:** Johns-Manville, Johns-Man. **Fuel Feed:** Stewart Vacuum Tank, Vacuum.

*Wire special equipment. †Wood optional.

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1917 Motor Cars Listed with

MAKE AND MODEL	No. of Cylinders	Bore and Stroke, Inches	Piston Displacement, Cubic Inches	Gear Ratio on Direct	Make of Engine	Cylinder Shape	Cam-shaft Drive	Water Circu-lation	LUBRICATION		ELECTRIC SYSTEM		IGNITION			CARBURETION	
									System	Type of Pump	Generator Make	Voltage	System	Make	Control	Make of Carburetor	Fuel Feed
Jones 26-B	6	3½x5½	303.1	5.00-1	Lewis	L	Helical	Ther	Circ-Spl	Gear	Auto-Lite	6	Dual	Auto-Lite	Hand	Stromberg	Vacuum
Jordan 60	6	3½x5½	303.1	4.47-1	Continent.	L	Helical	Cent	Splash-Pres	Piston	Bijur	6	Single	Bosch	Hand	Stromberg	Vacuum
Kent A	4	3½x5	220.9	4.08-1	Continent.	L	Helical	Ther	Circ-Spl	Piston	Bosch	12	Dual	Bosch	2-Pt	Zenith	Vacuum
King EE	8	3 x5	282.7	4.60-1	Own	L	Chain	Ther	Pressure	Gear	Ward-L	6	Single	At Kent	H&A	Ball	Vacuum
Kissel 6-42	6	3½x5½	340.3	4.58-1	Own	L	Helical	Cent	Non-Splash	Gear	Westinghouse	6	Single	Eisemann	Hand	Stromberg	Vacuum
Kissel Hundred Pt. Six	6	3½x5	248.9	4.58-1	Own	L	Helical	Cent	Circ-Spl	Piston	Remy	6	Single	Remy	Hand	Stromberg	Vacuum
Kline 6-38F	6	3½x4½	224.0	4.50-1	Continent.	L	Helical	Cent	Splash-Pres	Piston	Westinghouse	6		Westinghouse	Hand	Rayfield	Vacuum
L																	
Lambert 90	4	4½x5½	297.8	.....	Rutenber	L	Spur	.....	Circ-Spl	Piston	Remy	6	Single	Remy	Hand	Schebler	Vacuum
Lambert 80	6	3½x4½	224.0	.....	Continent.	.....	Spur	Cent	Circ-Spl	Piston	Remy	6	Single	Remy	Hand	Schebler	Vacuum
Laurel 35	4	3½x4½	187.7	4.25-1	G.B.&S.	L	Chain	Ther	Splash-Pres	Piston	.....	6	Single	Dixie	Hand	Schebler	Gravity
Lexington 6-O-17	6	3½x4½	224.0	4.75-1	Continent.	L	Helical	Cent	Splash-Pres	Piston	Westinghouse	6	Single	Conn	Hand	Rayfield	Vacuum
Lexington 6-P	6	4½x5½	421.0	4.08-1	Continent.	L	Helical	Cent	Splash-Pres	Piston	Westinghouse	6	Double	Westinghouse	H&A	Stromberg	Vacuum
Liberty 10-A	6	3½x4½	207.1	4.75-1	Continent.	L	Helical	Ther	Splash-Pres	Piston	Delco	6	Single	Delco	Hand	Rayfield	Vacuum
Locomobile R-7 38	6	4½x5	425.6	3.85-1	Own	T	Helical	Cent	Splash-Pres	Gear	Westinghouse	6	Dual	Eisemann	Hand	Ball	Pressure
Locomobile M-7 48	6	4½x5½	524.8	3.85-1	Own	T	Helical	Cent	Splash-Pres	Gear	Westinghouse	6	Dual	Eisemann	Hand	Own	Pressure
Luverne 17	6	3½x5½	347.9	4.00-1	Continent.	L	Chain	Gear	Circ-Spl	Gear	Bosch	12	Double	Bosch	Hand	Schebler	Vacuum
Madison 4	6	3½x5	230.1	4.64-1	Rutenber	L	Helical	Cent	Circ-Spl	Gear	Remy	6	Single	Remy	Hand	Rayfield	Vacuum
Madison	6	3½x5	230.1	4.64-1	Rutenber	L	Helical	Cent	Circ-Spl	Gear	Remy	6	Single	Remy	Hand	Rayfield	Vacuum
Madison	6	3½x5	230.1	4.64-1	Rutenber	L	Helical	Cent	Circ-Spl	Gear	Remy	6	Single	Remy	Hand	Rayfield	Vacuum
Madison 5	6	3½x5	230.1	4.64-1	Rutenber	L	Helical	Cent	Circ-Spl	Gear	Remy	6	Single	Remy	Hand	Rayfield	Vacuum
Madison 7	6	3½x5	230.1	4.64-1	Rutenber	L	Helical	Cent	Circ-Spl	Gear	Remy	6	Single	Remy	Hand	Rayfield	Vacuum
Maibohm A	4	3½x4	122.7	4.00-1	Own	L	Helical	Ther	Splash-Pres	Piston	Disco	12	Single	At Kent	Atmtc	Zenith	Gravity
Majestic M	8	3x5	282.7	.....	.....	.....	Chain	Ther	Pressure	Gear	Rob Myers	6	Single	At Kent	Hand	.....	Vacuum
Majestic A	8	3½x5	331.8	.....	.....	.....	Helical	Gear	Pressure	Gear	Rob Myers	6	Single	At Kent	Hand	.....	Vacuum
Marion-Handley A 6-40	6	3½x5	230.1	4.42-1	Rutenber	L	Helical	Cent	Splash-Pres	Piston	Westinghouse	6	Single	Westinghouse	Hand	Stromberg	Vacuum
Marion-Handley B 6-60	6	3½x5½	303.1	4.08-1	Continent.	L	Helical	Cent	Splash-Pres	Piston	Westinghouse	6	Single	Westinghouse	Hand	Stromberg	Vacuum
Marmon 34	6	3½x5½	339.7	3.69-1	Own	I	Helical	Cent	Pressure	Gear	Bosch	12	Single	Bosch	Hand	Stromberg	Gravity
Maxwell 25	4	3½x4½	185.8	3.58-1	Own	L	Helical	Ther	Circ-Spl	Piston	Simms-Huff	6	Dual	At Kent	Hand	K-D	Gravity
McFarlan	6	4½x6	572.5	3.50-1	Teetor	T	Helical	Cent	Splash-Pres	Piston	Westinghouse	6	Double	Bosch	Hand	Stromberg	Vacuum
Mercer 22-73	4	3½x6½	298.2	3.22-1	Own	L	Chain	Cent	Pressure	Gear	U.S.L.	12	Single	Bosch	Hand	Corser	Vacuum
Mercer 22-73	4	3½x6½	298.2	3.87-1	Own	L	Chain	Cent	Pressure	Gear	U.S.L.	12	Single	Bosch	Hand	Corser	Vacuum
Metz 25	4	3½x4	188.7	4.00-1	Own	L	Spur	Ther	Non-Splash	Gear	G&D	6	Single	Dixie	Fixed	A. W. T.	Gravity
Mitchell D-40	6	3½x5	248.9	4.41-1	Own	L	Helical	Cent	Circ-Spl	Piston	Splitdorf	6	Single	Conn	Hand	Rayfield	Vacuum
Mitchell C-42	6	3½x5	288.6	4.41-1	Own	L	Helical	Cent	Circ-Spl	Piston	Westinghouse	6	Single	Conn	Hand	Rayfield	Vacuum
Meline-Knight C MK-40	1	3½x5	220.9	4.30-1	Own	I	Chain	Ther	Pressure	Gear	Wagner	6	Single	Conn	Hand	Schebler	Vacuum
Meline-Knight G MK-50	4	4 x6	301.6	4.00-1	Own	I	Chain	Ther	Pressure	Gear	Wagner	6	Single	Conn	Hand	Schebler	Vacuum
Meniter C&R	4	3½x4½	187.7	4.00-1	G.B.&S.	L	Chain	Ther	Pressure	.....	Heinze	6	Dual	Heinze	Hand	Schebler	Vacuum
Meniter N&O	6	3½x4½	224.0	4.00-1	Continent.	L	Helical	Cent	Circ-Spl	.....	Heinze	6	Dual	Heinze	Hand	Stromberg	Vacuum
Monroe M-3	4	3 x4½	120.2	4.25-1	Sterling	I	Helical	Ther	Circ-Splash	Piston	Auto-Lite	6	Single	Conn	Hand	Zenith	Gravity
Monroe M-4	4	3½x4½	149.3	4.75-1	Own	I	Helical	Ther	Pressure	Gear	Auto-Lite	6	Single	Conn	Hand	Zenith	Vacuum
Moon 6-43	6	3½x4½	224.0	4.75-1	Continent.	L	Helical	Cent	Splash-Pres	Piston	Delco	6	Single	Delco	Hand	Rayfield	Vacuum
Moon 6-66	6	3½x5½	303.1	4.42-1	Continent.	L	Helical	Cent	Splash-Pres	Piston	Delco	6	Single	Delco	Atmtc	Rayfield	Vacuum
Moore 30	4	3½x4½	187.7	3.70-1	G.B.&S.	L	Chain	Ther	Circ-Spl	Gear	Disco	6	Single	Dixie	Hand	Schebler	Vacuum
Murray 70-T	8	3½x5	331.8	4.47-1	Hersh-Sp	L	Helical	Cent	Pressure	Gear	.....	6	Single	Dixie	Hand	Zenith	Vacuum
Napoleon 30	4	3½x5	192.4	4.00-1	Lycoming	L	Helical	Ther	Circ-Spl	Piston	Dyneto	6	Single	Conn	Hand	Carter	Vacuum
National Highway 6	6	3½x5½	303.1	4.58-1	Own	L	Helical	Cent	Splash-Pres	Piston	Westinghouse	6	Single	Dixie	Hand	Rayfield	Vacuum
National Highway 12	12	2½x4½	370.1	5.00-1	Own	L	Helical	Cent	Pressure	Gear	Bijur	6	Single	Delco	Hand	Rayfield	Vacuum
Oakland 34	6	2½x4½	177.0	4.50-1	Northway	I	Helical	Cent	Circ-Spl	Piston	Delco	6	Single	Delco	Hand	Marvel	Vacuum
Oakland 50	8	3½x4½	346.3	4.08-1	Northway	L	Helical	Cent	Splash-Pres	Gear	Delco	6	Single	Delco	H&A	Stromberg	Vacuum
Ogren 102	6	3½x5½	347.9	3.75-1	Continent.	L	.....	Cent	Pressure	Gear	Westinghouse	6	Dual	Bosch	H&F	Rayfield	Vacuum
Oldsmobile 45	8	2½x4½	246.7	4.92-1	.....	L	Helical	Cent	Pressure	Gear	Delco	6	Single	Delco	H&A	Johnson	Vacuum
Overland 90	4	3½x5	178.9	3.75-1	Own	L	Helical	Ther	Circ-Spl	Piston	Auto-Lite	6	Single	Conn	Hand	Tillotson	Vacuum
Overland 85	4	4½x4½	240.5	4.00-1	Own	L	Helical	Ther	Circ-Spl	Gear	Auto-Lite	6	Single	Conn	Hand	Tillotson	Vacuum
Overland 85	6	3½x4½	224.0	4.60-1	Continent.	L	Helical	Cent	Pressure	Gear	Auto-Lite	6	Single	Conn	Hand	Tillotson	Vacuum
Owen Magnetic M-25	6	3½x5½	303.1	4.50-1	Continent.	L	Helical	Cent	Splash-Pres	Piston	Own	24	Single	Bosch	Hand	Zenith	Vacuum
Owen Magnetic O-36	6	3½x5½	364.5	3.50-1	Buda	L	Helical	Cent*	Splash-Pres	Gear	Own	24	Single	Bosch	Hand	Zenith	Vacuum

ABBREVIATIONS:—**Make of Engine:** Continental, Continent; Herschell-Spillman, Hersh-Sp; Golden, Belknap & Swartz, G.B.&S.; Massnick-Phipps, Mass-Ph. **Cylinder Shape:** L-Head, L; I-Head, I; T-Head, T. **Camshaft Drive:** Spur Gears, Spur. **Water Circulation:** Centrifugal, Cent; Thermo-syphon, Ther. **Lubrication System:** Splash-Pressure, Splash-Pres; Circulating-Splash, Circ-Spl. **Oil Pump Type:** Impeller, Imp. **Electric System:** Ward Leonard, Ward-L; Gray & Davis, G&D; Allis-Chalmers, Allis-Ch; Leece-Neville, Leece-N. **Ignition System:** Dual-Double, Dual-D. **Ignition Make:** Atwater Kent, At Kent. **Ignition Control:** Hand and Automatic, H&A; Automatic, Atmtc. **Make of Carbureter:** Reichenbach, Reichbch; Longuemare, Longmare. **Clutch Type:** Multiple Disk, Mul-D **Gearset Type:** Selective, Sel; Planetary, Plan; Friction, Fric. **Gearset Location:** Unit with Motor, Unit M; Unit with Axle, Unit X; Amidship, Amid; Unit with Torque Tube, Unit T. **Final Drive:** Spira

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Their Technical Specifications

TRANSMISSION									RUNNING GEAR							BEARINGS			
	GEARSET									TIRES									
Clutch Type	Type	Location	Forward Sp'ds	Final Drive	Car Drives Through	Rear Axle Type	Make of Rear Axle	Torque Taken By	Wheelbase	Front	Rear	Wheels	Rear Springs	Make of Speedometer	Crankshaft Bearings	Number	Gearset	Rear Axle	Front Wheel	MAKE AND MODEL
Plate	Sel	Unit M.	3	Bevel	Springs.	Float	Timken	Springs.	125	35x4½	35x4½	Wood	S-E		Plain.	3	Roll.	Roll.	Roll.	Jones 26-B
Disk	Sel	Unit M.	3	Sp.B.	Springs.	Semi-F.	Timken	Springs.	127	35x4½	35x4½	Wood	S-E	VanSicklen	Plain.	3	Ball.	Roll.	Roll.	Jordan 6J
Disk	Sel	Unit M.	3	Sp.B.	Springs.	¾ Float	Timken	Springs.	116	32x4	32x4	Opt.	¾ Ell		Plain.	3	Plain.	Plain.	Roll.	Kent A
Plate	Sel	Unit M.	3	Sp.B.	Springs.	¾ Float	American	Tor.A	120	34x4	34x4	Wood	Cant	Stewart	Plain.	3	R&P		Ball.	King EE
Disk	Sel	Unit M.	3	Sp.B.	Springs.	Float	Own	Springs.	128	34x4	34x4	Wood	¾ Ell	Stewart	Plain.	3	Ball.	Roll.	Roll.	Kissel 6-42
Cone	Sel	Unit M.	3	Sp.B.	Springs.	Float	Own	Springs.	117	32x4	32x4	Opt.	¾ Ell	Stewart	Plain.	3	Ball.	Roll.	Roll.	Kissel Hundred Pt. Six
Plate	Sel	Unit M.	3	Sp.B.	Springs.	Float	Hess	Springs.	120	34x4	34x4	Wood	¾ Ell		Plain.	3	Ball.	Roll.	Ball.	Kline 6-38-F
	Fric					Semi-F.	Salisbury		115	34x3½	34x3½	Wood	Ell						Ball.	Lambert 90
	Fric					Semi-F.	Salisbury		112	33x4	33x4	Wood	Ell		Plain.	3			Ball.	Lambert 80
Disk	Sel	Unit M.	3	Bevel	Springs.	Float	Peru	Tor.T	112	32x3½	32x3½	Wood*	Cant	Stewart	Plain.	3	Ball.	Roll.	Ball.	Laurel 35
Plate	Sel	Unit M.	3	Sp.B.	Springs.	¾ Float	Hess	Springs.	116	32x4	32x4	Wood*	¾ Ell	Stewart	Plain.	3	B&P	B&R.	Ball.	Lexington 6-O-17
Cone	Sel	Unit M.	3	Sp.B.	Springs.	Float	Timken	Tor.T	144	36x4½	36x4½	Wood*	¾ Ell	Stewart	Plain.	3	Ball.	Roll.	Roll.	Lexington 6-P
Plate	Sel	Unit M.	3	Sp.B.	Springs.	Semi-F.	Timken	Springs.	115	32x4	32x4	Wood	S-E		Plain.	3	Ball.	Roll.	Roll.	Liberty 10-A
Disk	Sel	Amid	4	Sp.B.	Rad.Rd.	Float	Own	Tor.A	139	36x4½	37x5	Wood	¾ Ell	Warner	Plain.	7	Ball.	Ball.	Roll.	Locomobile R-7 38
Disk	Sel	Amid	4	Sp.B.	Rad.Rd.	Float	Own	Tor.A	142	37x5	37x5	Wood	¾ Ell	Warner	Plain.	7	Ball.	Ball.	Roll.	Locomobile M-7 48
Disk	Sel	Unit M.	3	Sp.B.	Springs.	Float	Hess	Springs.	132	35x4½	35x4½	Wood	S-E		Plain	3	Ball.	B&R.	Roll.	Luverne 17
Disk	Sel	Unit M.		Sp.B.	Springs	Float	American	Springs.	120	34x4	34x4	Wood	¾ Ell	Stewart	Plain.	3	Ball.	Ball.	Ball.	Madison 4
Disk	Sel	Unit M.	3	Sp.B.	Springs	Float	American	Springs.	115	34x4	34x4	Wood	¾ Ell		Plain.	3	Ball.	Ball.	Ball.	Madison
Disk	Sel	Unit M.	3	Sp.B.	Springs.	Float	American	Springs.	124	34x4	34x4	Wood	¾ Ell		Plain.	3	Ball.	Ball.	Ball.	Madison
Disk	Sel	Unit M.	3	Sp.B.	Springs.	Float	American	Springs.	115	34x4	34x4	Wood	¾ Ell	Stewart	Plain.	3	Ball.	Ball.	Ball.	Madison 5
Disk	Sel	Unit M.	3	Sp.B.	Springs.	Float	American	Springs.	124	34x4	34x4	Wood	¾ Ell	Stewart	Plain.	3	Ball.	Ball.	Ball.	Madison 7
Disk	Sel	Unit M.	3	Bevel	Springs.	¾ Float	Detroit	Springs.	105	30x3½	30x3½	Opt.	S-E	Stewart	Plain.	2	Ball.	Ball.	Ball.	Maibohm A
Plate	Sel	Unit M.	3	Sp.B.	Springs.	¾ Float		Springs.	125	32x4	32x4	Wood	S-E	Stewart	Plain	3	B&R	Roll	Ball.	Majestic M
Plate	Sel	Unit M.	3	Sp.B.	Springs.	Float		Springs.	135	35x5	35x5	Wire	S-E	Stewart	Plain.	3	B&R.	Ball.	Ball.	Majestic A
Disk	Sel	Unit M.	3	Sp.B.	Springs.	¾ Float	Salisbury	Springs.	120	32x4	32x4	Wood	S-E	Stewart	Plain.	3	B&P		Ball.	Marion-Handley A 6-40
Disk	Sel	Unit M.	3	Sp.B.	Springs.	¾ Float	Salisbury	Springs.	125	35x4½	35x4½	Wood	S-E	Stewart	Plain.	3	Ball.	B&R.	Ball.	Marion-Handley B 6-60
Cone	Sel	Unit T.	3	Sp.B.	Tor.T.	¾ Float	Own	Tor.T	136	34x4½	34x4½	Wire	Trans	VanSicklen	Plain.	4	BR&P.	B&R.	Roll.	Marmon 34
Cone	Sel	Unit M.	3	Bevel	Springs.	¾ Float	Own	Tor.T	103	30x3½	30x3½	Wood	¾ Ell	Stewart	Plain.	2	R&P	Roll.	Ball.	Maxwell 25
Plate	Sel	Amid	3	Sp.B.	Springs.	Float	Timken	Tor.A	136	35x5	35x5	Opt.	S-E	Warner	Plain.	4	Roll.	Roll.	Roll.	McFarlan
Disk	Sel	Amid	4	Sp.B.	Springs.	Float	Own	Springs.	115	32x4	32x4	Wood	S-E	Warner	Plain.	3	Ball.	B&R.	Roll.	Mercer 22-73
Disk	Sel	Amid	4	Sp.B.	Springs.	Float	Own	Springs.	132	34x4½	34x4½	Wood	S-E	Warner	Plain	3	Ball.	B&R.	Roll.	Mercer 22-73
	Fric	Amid	7	S Chain	Rad.Rd.		Own	Rad.Rd	108	32x3½	32x3½	Wood	Ell	A.W.T	Plain.	3		Roll.	Ball.	Metz 25
Cone	Sel	Amid	3	Sp.B.	Springs.	¾ Float	Own	Tor.T	120	32x4	32x4	Wood	Cant	Stewart	Plain.	3	BR&P.	B&R.	Ball.	Mitchell D-40
Cone	Sel	Amid	3	Bevel	Springs.	Float	Own	Tor.T	127	34x4	34x4	Wood	Cant	Stewart	Plain.	3	BR&P.	B&R.	Roll.	Mitchell C-42
Cone	Sel	Amid	3	Sp.B.	Rad.Rd.	Semi-F.	Timken	Rad.Rd	118	34x4	34x4	Wood	Trans	Stewart	Plain.	3	R&P.	Roll.	Roll.	Moline-Knight C MK-40
Cone	Sel	Amid	3	Sp.B.	Rad.Rd.	¾ Float	West.M	Rad.Rd	122	35x4½	35x4½	Wood	Trans	Stewart	Plain.	3	R&P.	Roll.	Ball.	Moline-Knight G MK-50
Disk	Sel	Unit M.		Bevel	Springs.	Semi-F.	Russell	Springs.	108	32x3½	32x3½	Wood	¾ Ell		Plain	3	B&R.	Roll.	Ball.	Monitor C&R
Disk	Sel	Unit M.	3	Bevel	Springs.	Semi-F.	Russell	Springs.	115	33x4	33x4	Wood	¾ Ell		Plain.	3	B&R.	Roll.	Ball.	Monitor N&O
Disk	Sel	Unit M.	3	Bevel	Springs.	¾ Float	West.M	Springs.	96	30x3	30x3	Wood	¾ Ell	Stewart	Plain.	2	Ball.	Roll.	Ball.	Monroe M-3
Disk	Sel	Unit M.	3	Sp.B.	Tor A	Special	Hess	Tor.A	115	32x4	32x4	Wood	Cant	Stewart	Plain.	2	Ball.	Roll.	Roll.	Monroe M-4
Disk	Sel	Unit M.	3	Sp.B.	Springs.	Float	Hess	Springs.	118	33x4	33x4	Wood	S-E	Stewart	Plain.	3	B&P	B&R.	Ball.	Moon 6-43
Disk	Sel	Unit M.	3	Sp.B.	Springs.	Semi-F.	Timken	Springs.	125	35x4½	35x4½	Wood	S-E	Stewart	Plain.	3	B&P	Roll.	Roll.	Moon 6-66
Disk	Sel	Unit M.	3	Sp.B.	Tor.A	Float	Peru	Tor.T	106	30x3½	30x3½	Wood	Cant		Plain.		Ball.	B&P.	Ball.	Moor, 30 35
Plate	Sel	Unit M.	3	Sp.B.	Springs.	Float	Timken	Springs.	128	34x4½	34x4½	Opt.	¾ Ell	Warner	Plain.	3	Roll.	Roll.	Roll.	Murray 70-T
Disk	Sel	Unit M.	3	Bevel	Springs.	Semi-F.		Tor.T	112	31x4	31x4	Wood	Cant		Plain.	2	Ball.	B&R.	Ball.	Napoleon 30
Cone	Sel	Unit M.	3	Sp.B.	Springs.	Float	Columbia	Tor.R	128	34x4½	34x4½	Wood	Cant	Warner	Plain.	3	Ball.	Roll.	Roll.	National Highway 6
Cone	Sel	Unit M.	3	Sp.B.	Springs.	Float	Columbia	Tor.R	128	34x4½	34x4½	Wood	Cant	Warner	Plain.	3	Ball.	Roll.	Roll.	National Highway 12
Cone	Sel	Unit M.	3	Bevel	Springs.	Float	West.M	Springs.	112	32x4	32x4	Wood	S-E		Plain.	3	BR&P.	Roll.	Ball.	Oakland 34
Cone	Sel	Unit M.	3	Sp.B.	Springs.	Float	West.M	Springs.	127	34x4½	34x4½	Wood	¾ Ell		Plain.	3	BR&P.	Roll.	Ball.	Oakland 50
Disk	Sel	Unit M.	3	Bevel	Springs.	Float	Timken	Springs.	132	34x4½	34x4½	Wire	S-E	Stewart	Roll.		Roll.		Roll.	Ogren 102
Cone	Sel	Unit M.	3	Sp.B.	Springs.	Float	West.M	Springs.	120	33x4	33x4	Wood	¾ Ell	Stewart	Plain.	2	B&R.	B&R.	Roll.	Oldsmobile 45
Cone	Sel	Unit X.	3	Bevel	Tor.T	¾ Float	Own	Tor.T	104	31x4	31x4	Wire	Cant	Stewart	Plain.	2	B&R.	B&R.	Roll.	Overland 90
Cone	Sel	Unit X.	3	Bevel	Tor.T	¾ Float	Own	Tor.T	112	32x4	32x4	Wood	Cant	Stewart	Plain.	5	B&R.	B&R.	Roll.	Overland 85
Cone	Sel	Unit X.	3	Sp.B.	Tor.T	¾ Float	Own	Tor.T	116	32x4	32x4	Wood	Cant	Stewart	Plain.	3	B&R.	B&R.	Roll.	Overland 85
Owen			6	Sp.B.	Springs.	¾ Float	Timken	Springs.	125	34x4½	34x4½	Wood	S-E	Warner	Plain.	3		Roll.		Owen Magnetic M-25
Owen			6	Sp.B.	Tor.A	Float	American	Tor.T	136	35x5	35x5	Wire	S-E	Warner	Plain.	4		Roll.		Owen Magnetic O-36

Bevel, Sp.B. **Car Drives Through:** Radius Rods, Rad.Rd; Torsion Tube, Tor.T; Torque Arm, Tor. A. **Rear Axle:** Floating, Float; Semi-Floating, Semi-F; Three-quarter Floating, ¾ Float. **Make of Axle:** Weston-Mott, West.M; Walker-Weiss, W.Weiss. **Rear Springs:** Elliptic, Ell; Three-quarter Elliptic ¾ Ell; Semi-Elliptic, S-E; Cantilever, Cant; Platform, Plat; Transverse Semi-Elliptic, Tr.S-E. **Bearings:** Roller, Roll; Ball and Roller, B&R; Ball and Plain, B&P; Ball, Roller and Plain, BR&P; Cup and Cone, C&C. **Make of Speedometer:** Johns-Manville, Johns-Man. **Fuel Feed:** Stewart Vacuum Tank, Vacuum.

*Wire special equipment. †Wood optional.

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1917 Motor Cars Listed with

MAKE AND MODEL	No. of Cylinders	Bore and Stroke, Inches	Piston Displacement, Cubic Inches	Gear Ratio on Direct	Make of Engine	Cylinder Shape	Cam-shaft Drive	Water Circu-lation	LUBRICATION		ELECTRIC SYSTEM		IGNITION			CARBURETION	
									System	Type of Pump	Generator Make	Voltage	System	Make	Control	Make of Carbureter	Fuel Feed
Packard.....2-25, 2-35	12	3 x5	424.1	4.36–1	Own.....	L	Chain...	Cent....	Pressure.....	Gear.....	Bijur.....	6	Single...	Delco.....	H&A...	Own.....	Pressure.....
Paige Fleetwood.....6–38	6	3½x5	230.1	4.41–1	Rutenber..	L	Helical..	Cent....	Splash-Pres....	Piston....	G&D.....	6	Single...	Remy.....	Hand...	Rayfield.....	Gravity.....
Paige Fairfield.....6–46	6	3½x5½	303.1	4.35–1	Continent..	L	Helical..	Cent....	Splash-Pres....	Piston....	G&D.....	6	Single...	Remy.....	Hand...	Rayfield.....	Gravity.....
Partin-Palmer.....20	4	3½x4½	138.1	4.00–1	LeRoi.....	L	Helical..	Ther....	Circ-Spl.....	Piston....	Allis-Ch.....	6	Single...	Conn.....	Hand...	Schebler.....	Gravity.....
Partin-Palmer.....32	4	3½x5	192.4	4.00–1	Lycoming..	L	Helical..	Ther....	Circ-Spl.....	Gear.....	Disco.....	6	Single...	Conn.....	Hand...	Carter.....	Vacuum.....
Paterson.....6–45	6	3½x4½	224.0	4.50–1	Continent..	L	Helical..	Cent....	Splash-Pres....	Piston....	Delco.....	6	Dual....	Delco.....	Hand...	Stromberg...	Vacuum.....
Pathfinder.....2B–TC–2C	12	2¾x5	389.5	4.33–1	Weidely...	I	Helical..	Gear....	Pressure.....	Gear.....	Delco.....	6	Duplex..	Delco.....	H&A...	Stromberg...	Vacuum.....
Pathfinder.....3B	12	2¾x5	389.5	4.33–1	Weidely...	I	Helical..	Cent....	Splash-Pres....	Gear.....	Delco.....	6	Single...	Delco.....	Hand...	Stromberg...	Gravity.....
Peerless.....56	8	3½x5	331.8	4.45–1	Own.....	L	Helical..	Cent....	Pressure.....	Gear.....	G&D.....	6	Single...	At Kent.....	H&A...	Ball.....	Vacuum.....
Phianna.....M	4	3⅞x6	287.0	4.00–1	Own.....	L	Chain...	Cent....	Pressure.....	Gear.....	Ward-L.....	6	Single...	Bosch.....	Hand...	H&N.....	Vacuum.....
Pierce-Arrow.....38–C–4	6	4 x5½	414.7	3.78–1	Own.....	T	Helical..	Cent....	Pressure.....	Gear.....	Westinghouse	6	Dual-D..	Bosch.....	Hand...	Own.....	Pressure.....
Pierce-Arrow.....48–B–4	6	4½x5½	524.8	3.53–1	Own.....	T	Helical..	Cent....	Pressure.....	Gear.....	Westinghouse	6	Dual-D..	Bosch.....	Hand...	Own.....	Pressure.....
Pierce-Arrow.....66–A–4	6	5 x7	824.7	2.88–1	Own.....	T	Helical..	Cent....	Pressure.....	Gear.....	Westinghouse	6	Dual-D..	Bosch.....	Hand...	Own.....	Pressure.....
Pilot.....6–45	6	3½x5	230.1	4.75–1	Teetor....	L	Helical..	Cent....	Splash-Pres....	Gear.....	Delco.....	6	Single...	Delco.....	Hand...	Zenith.....	Vacuum.....
Premier.....6–B	6	3⅞x5½	295.3	4.45–1	Own.....	I	Helical..	Cent....	Splash-Pres....	Gear.....	Delco.....	6	Single...	Delco.....	Atmtc...	Johnson.....	Vacuum.....
Princess.....4–36–F	4	3¾x4½	187.7	4.25–1	G.B.&S...	L	Chain...	Ther....	Circ-Spl.....	Piston....	Disco.....	6	Single...	Splitdorf....	Hand...	Schebler.....	Vacuum.....
Pullman.....424–32	4	3¾x4½	187.7	4.50–1	G.B.&S...	L	Chain...	Ther....	Splash-Pres....	Piston....	Splitdorf....	6	Single...	Dixie.....	Hand...	Stromberg...	Vacuum.....
Regal.....J	4	3½x4¾	182.8	4.25–1	Own.....	L	Helical..	Ther....	Circ-Spl.....	Piston....	Heinze.....	6	Single...	Heinze.....	Hand...	Carter.....	Vacuum.....
Regal.....F	8	3 x4½	254.4	4.00–1	Own.....	L	Helical..	Ther....	Pressure.....	Gear.....	Dyneto.....	12	Single...	.....	Hand...	Johnson.....	Vacuum.....
Reo.....R	4	4½x4½	240.5	4.30–1	Own.....	L	Helical..	Cent....	Circ-Spl.....	Piston....	Remy.....	6	Single...	Remy.....	Hand...	Johnson.....	Pres-Grav...
Reo.....M	6	3 3/16x5½	306.6	4.30–1	Own.....	L	Helical..	Cent....	Circ-Spl.....	Piston....	Remy.....	6	Single...	Remy.....	Hand...	Rayfield.....	Vacuum.....
Richmond.....6–17	6	3½x5	288.6	4.25–1	Own.....	L	Helical..	Cent....	Splash-Pres....	Piston....	Delco.....	6	Single...	Delco.....	Hand...	Stromberg...	Vacuum.....
Roamer.....	6	3½x5	230.1	4.42–1	Rutenber..	L	Helical..	Cent....	Splash-Pres....	Gear.....	Bijur.....	6	Dual....	Bosch.....	Hand...	Stromberg...	Vacuum.....
Ross.....C	8	3½x5	331.8	4.64–1	Hersh-Sp..	L	Helical..	Cent....	Pressure.....	Gear.....	Ward-L.....	6	Single...	At Kent.....	H&A...	Zenith.....	Vacuum.....
Saxon.....B–5–R	4	2¾x4	94.0	5.00–1	Continent..	L	Helical..	Ther....	Circ-Spl.....	Piston....	Wagner.....	6	Single...	At Kent.....	Atmtc...	Reichbch....	Gravity.....
Saxon.....S–4	6	2¾x4½	175.3	4.75–1	Continent..	L	Helical..	Ther....	Circ-Spl.....	Piston....	Wagner.....	6	Single...	Remy.....	Hand...	Rayfield.....	Gravity.....
Scripps-Booth.....D	8	2¾x3¾	162.3	4.80–1	Ferro.....	I	Helical..	Ther....	Pressure.....	Gear.....	Wagner.....	6	Single...	Remy.....	Atmtc...	Zenith.....	Vacuum.....
Simplex.....	6	4¾x6½	563.7	.....	Own.....	L	Chain...	Cent....	Pressure.....	Gear.....	Bosch.....	6	Dual....	{Bosch... / Eisemann}	Hand...	Newcomb...	Pressure.....
Singer.....17	6	4 x5½	414.7	3.77–1	Hersh-Sp..	T	Helical..	Cent....	Pressure.....	Gear.....	Westinghouse	6	Single...	Bosch.....	Hand...	Rayfield.....	Vacuum.....
Standard.....E	8	3 x5	282.7	4.45–1	Hersh-Sp..	L	Helical..	Cent....	Pressure.....	Gear.....	Westinghouse	6	Single...	Westinghouse	Hand...	Zenith.....	Vacuum.....
Standard.....F	8	3½x5	331.8	4.45–1	Hersh-Sp..	L	Helical..	Cent....	Pressure.....	Gear.....	Apple.....	6	Single...	Dixie.....	Hand...	Zenith.....	Vacuum.....
Stearns-Knight.....SKL4–32	4	3¾x5⅝	248.5	4.50–1	Own.....	I	Chain...	Cent....	Splash-Pres....	Gear.....	Westinghouse	12	Single...	Remy.....	Hand...	Schebler.....	Gravity.....
Stearns-Knight.....SK8–33	8	3½x5	331.8	4.75–1	Own.....	I	Chain...	Ther....	Splash-Pres....	Gear.....	Westinghouse	12	Single...	Remy.....	Hand...	Rayfield.....	Vacuum.....
Stephens.....60–65	6	3½x4½	224.0	4.75–1	Continent..	L	Helical..	Cent....	Circ-Spl.....	Piston....	Auto-Lite...	6	Single...	Conn.....	Hand...	Zenith.....	Vacuum.....
Studebaker.....SF4–40	4	3½x5	235.8	4.00–1	Own.....	L	Helical..	Cent....	Circ-Spl.....	Gear.....	Wagner.....	6	Single...	Remy.....	Hand...	Schebler.....	Vacuum.....
Studebaker.....ED6–50	6	3½x5	353.8	3.70–1	Own.....	L	Helical..	Cent....	Circ-Spl.....	Gear.....	Wagner.....	6	Single...	Remy.....	Hand...	Schebler.....	Vacuum.....
Stutz.....R	4	4½x5½	389.9	3.06–1	Wisconsin.	I	Helical..	Cent....	Pressure.....	Gear.....	Remy.....	8	Single...	Bosch	Hand...	Stromberg...	Pressure.....
Sun.....17	6	3½x5	230.1	4.75–1	Own.....	L	Helical..	Cent....	Splash-Pres....	Piston....	Remy.....	7	Single...	Remy.....	Hand...	Rayfield.....	Vacuum.....
Templar.....445	4	3⅞x5½	196.8	4.45–1	Own.....	I	Chain...	Cent....	Pressure.....	Gear.....	Remy.....	6	Single...	Remy.....	Hand...	Zenith.....	Vacuum.....
Templar.....645	6	3 x5	212.0	4.45–1	Own.....	I	Chain...	Cent....	Pressure.....	Gear.....	Remy.....	6	Single...	Remy.....	Hand...	Zenith.....	Vacuum.....
Velie Biltwell.....28	6	3½x4½	224.0	4.33–1	Continent..	L	Helical..	Cent....	Splash-Pres....	Piston....	Remy.....	6	Single...	Remy.....	Atmtc...	Stromberg...	Vacuum.....
Velie Biltwell.....27	6	3½x5½	303.1	4.08–1	Continent..	L	Helical..	Cent....	Splash-Pres....	Piston.....	Remy.....	6	Single...	Remy.....	Atmtc...	Stromberg...	Vacuum.....
Westcott.....S–17	6	3½x5½	303.1	4.45–1	Continent..	L	Helical..	Cent....	Splash-Pres....	Piston....	Delco.....	6	Single...	Delco.....	H&A...	Rayfield.....	Vacuum.....
White.....16 Valve Four	4	4½x5¾	326.3	.....	Own.....	....	Helical..	Cent....	Pressure.....	Gear.....	Leece-N.....	12	Single...	{Eisemann / Bosch...}	Hand...	Own.....	Vacuum.....
Willys-Knight.....88–4	4	4½x4½	240.5	4.30–1	Own.....	I	Chain...	Ther....	Splash-Pres....	Piston....	Auto-Lite...	6	Single...	Conn.....	Hand...	Tillotson....	Vacuum.....
Willys-Knight.....88–8	8	3¾x4	.....	4.6 –1	Own.....	I	Chain...	Ther....	Pressure.....	.....	Auto-Lite...	6	Single...	.....	H&A...	Zenith.....	Vacuum.....
Willys.....88–6	6	3½x5½	303.1	4.00–1	Continent..	L	Helical..	Cent....	Splash-Pres....	Piston....	Auto-Lite...	6	Single...	Conn.....	Hand...	Tillotson....	Vacuum.....
Winton.....33	6	3¾x5½	347.9	4.45–1	Own.....	L	Chain...	Cent....	Pressure.....	Piston....	Bijur.....	6	Single...	Bosch.....	Hand...	Rayfield.....	Vacuum.....
Winton.....48	6	4½x5½	524.8	4.08–1	Own.....	L	Chain...	Cent....	Pressure.....	Piston.....	Bijur.....	6	Single...	Bosch.....	Hand...	Rayfield.....	Vacuum.....
Woods Dual Power.....1600	4	2½x3½	68.7	8.25–1	Special....	L	Helical..	Ther....	Circ-Spl.....	Gear.....	.....	....	Single...	At Kent.....	Atmtc...	Zephyr.....	Gravity.....
Yale.....	8	3½x4½	276.1	4.45–1	Mass-Ph..	....	Chain...	Ther....	Circ-Spl.....	.....	Disco.....	6	Single...	Remy.....	Hand...	Rayfield.....	Vacuum.....

ABBREVIATIONS:—**Make of Engine:** Continental, Continent; Herschell-Spillman, Hersh-Sp; Golden, Belknap & Swartz, G.B.&S.; Massnick-Phipps, Mass-Ph. **Cylinder Shape:** L-Head, L; I-Head, I; T-Head, T. **Camshaft Drive:** Spur Gears, Spur. **Water Circulation:** Centrifugal, Cent; Thermo-syphon, Ther. **Lubrication System:** Splash-Pressure, Splash-Pres; Circulating-Splash, Circ-Spl. **Oil Pump Type:** Impeller, Imp. **Electric System:** Ward Leonard, Ward-L; Gray & Davis, G & D; Allis-Chalmers, Allis-Ch; Leece-Neville, Leece-N. **Ignition System:** Dual-Double, Dual-D. **Ignition Make:** Atwater Kent, At Kent. **Ignition Control:** Hand and Automatic, H&A; Automatic, Atmtc. **Make of Carbureter:** Reichenbach, Reichbch; Longuemare, Longmare. **Clutch Type:** Multiple Disk, Mul-D. **Gearset Type:** Selective, Sel; Planetary, Plan; Friction, Fric. **Gearset Location:** Unit with Motor, Unit M; Unit with Axle, Unit X; Amidship, Amid; Unit with Torque Tube, Unit T. **Final Drive:** Spiral

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Their Technical Specifications

Clutch Type	TRANSMISSION: GEARSET Type	GEARSET Location	GEARSET Forward Sp'ds	Final Drive	Car Drives Through	Rear Axle Type	Make of Rear Axle	Torqu Taken By	RUNNING GEAR: Wheelbase	TIRES Front	TIRES Rear	Wheels	Rear Springs	Make of Speedometer	Crankshaft Bearings Number	BEARINGS: Gearset	Rear Axle	Front Wheel	MAKE AND MODEL
Disk..	Sel ...	Unit M..	3	Sp.B....	Springs.	Semi-F..	Own.....	Tor.A...	126 135	35x5	35x5	Wood...	.....	Waltham....	Plain.. 3	B&R....	Ball...	Roll ..	Packard.....2-25, 2-35
Disk..	Sel....	Unit M..	3	Sp.B....	Tor.T...	¾ Float..	Salisbury..	Tor.T...	117	32x4	32x4	Wood...	Cant....	Stewart.....	Plain.. 3	B&R....	B&R..	Ball...	Paige Fleetwood.....6-38
Disk..	Sel....	Unit M..	3	Sp.B....	Springs..	¾ Float..	Salisbury..	Tor.T...	127	35x4½	35x4½	Wood...	Cant....	Stewart.....	Plain.. 3	B&R....	B&R..	Ball...	Paige Fairfield.....6-36
Disk..	Sel....	Unit X..	3	Bevel...	Tor.T...	Float...	Durston...	Tor.T...	96	30x3½	30x3½	Wood...	¾ Ell....	None.....	Plain.. 2	Ball....	Ball...	Ball...	Partin-Palmer.....2
Disk..	Sel....	Unit M..	3	Bevel...	Springs..	Float...	Peru.....	Springs..	110	32x3½	32x3½	Wood...	¾ Ell....	Stewart.....	Plain.. 2	Ball....	Roll...	Ball...	Partin-Palmer.....3
Cone..	Sel....	Unit M..	3	Sp.B....	Springs..	Float...	Hess.....	Springs..	117	32x4	32x4	Wood...	¾ Ell....	Stewart.....	Plain.. 3	Ball....	Roll...	Ball...	Paterson.....6-45
Disk..	Sel....	Unit M..	3	Sp.B....	Tor.A...	Float...	American..	Tor.T...	130	35x5	35x5	Wire....	¾ Ell....	Stewart.....	Plain.. 3	Roll....	Roll...	Roll...	Pathfinder.....2B-TC-2C
Disk..	Sel....	Unit M..	3	Sp.B....	Springs..	Float...	American..	Springs..	135	35x5	35x5	Wire....	S-E.....	Warner.....	Plain.. 3	Roll...	Roll...	Roll...	Pathfinder.....3B
Disk..	Sel....	Unit M..	3	Sp.B....	Springs..	Semi-F..	Timken...	Springs..	125	35x4½	35x4½	Wood...	Plat....	.....	Plain.. 3	B&R....	Roll...	Roll...	Peerless.....56
Disk..	Sel....	Amid...	4	Sp.B....	Rad.Rd.	Float...	.....	Rad.Rd.	.....	32x4½	32x4½	Opt.....	Cant....	Warner.....	Plain.. 3	Ball....	Roll...	B&R .	Phianna.....M
Cone..	Sel....	Amid...	4	Sp.B....	Springs..	Semi-F..	Own.....	Tor.T...	134	36x4½	36x4½	Wood...	¾ Ell....	Stewart.....	Plain.. 7	B&P....	B&R..	Roll...	Pierce-Arrow.....38-C-4
Cone..	Sel....	Amid...	4	Sp.B....	Springs..	Semi-F..	Own.....	Tor.T...	142	37x5	37x5	Wood...	¾ Ell....	Stewart.....	Plain.. 7	B&P....	B&R..	Roll...	Pierce-Arrow.....48-B-1
Cone..	Sel....	Amid...	4	Sp.B....	Springs..	Semi-F..	Own.....	Tor.T...	147½	38x5½	38x5½	Wood...	¾ Ell....	Stewart.....	Plain.. 7	B&P....	B&R..	Roll...	Pierce-Arrow.....66-A-4
Plate..	Sel....	Unit M..	3	Sp.B....	Springs..	Float...	Hess.....	Tor.T...	119	32x4	32x4	Wood...	Cant....	Stewart.....	Plain. 3	Ball....	B&R..	Roll ..	Pilot.....6-45
Plate..	Sel....	Unit M..	3	Sp.B....	Springs..	Semi-F..	Timken...	Springs..	125½	35x4½	35x4½	Wood...	S-E.....	Warner.....	Plain.. 3	B&P....	Roll...	Roll...	Premier.....6-B
Disk..	Sel....	Unit M..	3	Sp.B....	Springs..	Float...	Own.....	Springs..	108	32x3½	32x3½	Wood...	¾ Ell....	.....	Plain.. 3	B&R....	B&R..	Ball...	Princess.....4-36-F
Disk..	Sel....	Unit M .	3	Bevel...	Springs..	Float...	Peru.....	Tor.T...	114	31x4	31x4	Wood...	Cant....	Stewart.....	Plain.. 3	Ball....	Roll...	Roll...	Pullman.....424-32
Cone..	Sel....	Unit M..	3	Bevel...	Tor.T...	Float...	Peru.....	Tor.T...	108	30x3½	30x3½	Wood...	Cant....	Stewart.....	Plain.. 3	Ball....	Roll...	Ball...	Regal.....J
Cone..	Sel....	Unit X..	3	Bevel...	Rad.Rd.	¾ Float..	Peru.....	Tor.T...	115	33x4	33x4	Wood...	Cant....	Stewart.....	Plain.. 2	Roll....	Roll...	Ball...	Regal.....F
Disk..	Sel....	Amid...	3	Sp.B....	Springs.	Semi-F..	Own.....	Tor.A...	115	34x4	34x4	Wood...	¾ Ell....	Stewart.....	Plain. 3	Roll....	Roll...	Roll ..	Reo.....R
Disk..	Sel....	Amid...	3	Sp.B....	Springs.	Float...	Own.....	Tor.A...	126	34x4½	34x4½	Wood...	Cant....	Stewart.....	Plain.. 3	Roll....	Roll...	Roll ..	Reo.....M
Cone..	Sel....	Unit M..	3	Sp.B....	Springs.	¾ Float..	Own.....	Springs..	124	35x4½	35x4½	Wood...	S-E.....	.....	Plain.. 3	Ball. ...	Ball...	Roll...	Richmond.....6-17
Plate..	Sel....	Unit M..	3	Sp.B....	Springs..	¾ Float..	Hess.....	Springs..	124	34x4	34x4	Wire....	¾ Ell....	Warner.....	Plain.. 3	Ball....	Ball...	Ball...	Roamer.....
Disk..	Sel....	Unit M..	3	Sp.B....	Springs..	¾ Float..	American..	Tor.T...	130	35x4½	35x4½	Wood...	¾ Ell....	.....	Plain.. 3	Ball....	Ball...	Ball...	Ross.....C
Disk..	Sel....	Unit X..	3	Bevel...	Tor.T...	Semi-F..	Timken...	Tor.T...	96	30x3	30x3	Wood...	Cant....	Standard....	Plain.. 2	R&P....	B&R..	Ball...	Saxon.....B-5-R
Disk..	Sel....	Unit X..	3	Sp.B....	Tor.T...	Semi-F..	Timken...	Tor.T...	112	32x3½	32x3½	Wood...	Cant....	Johns-Man..	Plain.. 3	R&P....	Roll...	Roll...	Saxon.....S-4
Disk..	Sel....	Unit M..	3	Sp.B....	Springs..	¾ Float..	Russell....	Rad.Rd.	120	32x4	32x4	Wire....	Cant....	Stewart.....	Plain.. 2	B&P....	B&R..	Ball...	Scripps-Booth.....D
Disk..	Sel....	Unit M..	4	Sp.B....	Springs..	Float...	Own.....	Springs..	143½	36x4½	37x5	Wood...	S-E.....	.....	Plain.. 3	Ball....	Ball...	Roll...	Simplex.....
Disk..	Sel....	Unit M..	4	Sp.B....	Springs..	Float...	Timken...	Springs..	136	35x5	35x5	Wire....	Cant....	Warner.....	Plain.. 3	Ball....	Roll...	Roll...	Singer.....17
Plate..	Sel....	Unit M..	3	Sp.B....	Springs..	Semi-F..	Timken...	Springs.	.....	35x4½	35x4½	Wood...	S-E.....	Stewart.....	Plain.. 3	B&R....	BR&P	Roll...	Standard.....E
Disk..	Sel....	Unit M..	3	Sp.B....	Springs..	Semi-F..	Timken...	Springs..	127	35x4½	35x4½	Wood...	S-E.....	Stewart.....	Plain. 3	B&R....	BR&P	Roll...	Standard.....F
Disk..	Sel....	Unit M..	3	Sp.B....	Springs..	Semi-F..	Own.....	Springs..	119	34x4	34x4	Opt.....	Cant....	Stewart.....	Plain.. 3	B&R....	B&R..	Ball...	Stearns-Knight.....SKL4-32
Disk..	Sel....	Unit M..	3	Sp.B....	Springs..	Semi-F..	Own.....	Springs..	123	35x4½	35x4½	Opt.....	Cant....	Stewart.....	Plain.. 3	B&R....	B&R..	Ball...	Stearns-Knight.....SK8-33
Disk..	Sel. ..	Unit M..	3	Bevel...	Springs..	Float...	Hess.....	Springs..	115	32x4	32x4	Wood...	S-E.....	Stewart.....	Plain.. 3	Ball....	Roll...	Ball...	Stephens.....60-65
Cone..	Sel....	Unit X..	3	Bevel...	Rad.Rd.	Float...	Own.....	Tor.A...	112	34x4	34x4	Wood...	¾ Ell....	Stewart.....	Plain.. 3	Roll....	Roll...	Roll...	Studebaker.....SF4-40
Cone..	Sel....	Unit X..	3	Bevel...	Rad.Rd.	Float...	Own.....	Tor.A...	122	34x4	34x4	Wood...	¾ Ell....	Stewart.....	Plain. 4	Roll....	Roll...	Roll...	Studebaker.....ED6-50
Cone..	Sel....	Unit X..	3	Bevel...	Tor.T...	¾ Float..	Own.....	Rad.Rd.	130	34x4½	34x4½	Wire....	S-E.....	.....	Plain.. 3	Ball....	Ball...	Roll...	Stutz.....R
Plate..	Sel....	Unit M..	3	Sp.B. ..	Springs..	Float...	Hess.....	Springs..	116	34x4	34x4	Wood...	S-E.....	Stewart.....	Plain.. 3	Ball	B&R..	Ball...	Sun.....17
Plate..	Sel....	Unit M..	3	Sp.B....	Springs .	Semi-F..	.....	Springs..	120	32x4	32x4	Opt.....	Ell.....	.....	Plain.. 3	Ball....	Roll...	Roll...	Templar.....445
Plate..	Sel....	Unit M..	3	Sp.B....	Springs..	Semi-F..	.....	Springs..	120	32x4	32x4	Opt.....	Ell.....	.....	Plain.. 3	Ball....	Roll...	Roll ..	Templar.....645
Plate..	Sel....	Unit M..	3	Sp.B....	Springs..	Semi-F..	Timken...	Springs..	115	32x4	32x4	Opt.....	¾ Ell....	Stewart.....	Plain.. 3	B&P....	Roll...	Roll...	Velie Biltwell.....28
Plate..	Sel....	Unit M..	4	Sp.B....	Springs..	Semi-F..	Timken...	Springs..	124	35x4½	35x4½	Opt.....	¾ Ell....	Stewart.....	Plain.. 3	B&R....	Roll...	Roll...	Velie Biltwell.....27
Disk..	Sel....	Unit M..	3	Sp.B....	Springs..	Semi-F..	Timken...	Tor.T...	125	35x4½	35x4½	Wood...	Cant....	Warner.....	Plain.. 3	B&R....	Roll...	Roll ..	Westcott.....S-17
Plate..	Sel....	Unit M..	4	Sp.B....	Springs..	Semi-F..	Own.....	Springs..	137½	37x5	37x5	Wood...	S-E.....	.....	Plain.. 3	Ball	Ball...	Ball...	White.....16 Valve Four
Cone..	Sel....	Unit X..	3	Sp.B....	Tor.T...	Float...	Own.....	Tor.T...	121	34x4½	34x4½	Wood...	Cant....	Stewart.....	Plain.. 3	B&R ...	Roll...	Roll...	Willys-Knight.....88-4
Cone..	Sel....	Unit A..	3	Sp.B....	Tor.T...	Float...	Own.....	Tor.T...	125	34x4½	34x4½	Wood...	Cant....	Stewart.....	Plain.. 2	B&R....	Roll...	Roll...	Willys-Knight.....88-8
Cone..	Sel....	Unit X..	3	Sp.B....	Tor.T...	Float...	Own.....	Tor T...	125	35x4½	35x4½	Wood...	Cant....	Stewart.....	Plain.. 3	B&R....	Roll...	Roll...	Willys.....88-6
Disk..	Sel....	Unit M .	4	Sp.B....	Springs..	Float...	.....	Tor.T...	128	36x4½	36x4½	Wood...	¾ Ell....	.....	Plain.. 4	B&R....	Roll...	Roll...	Winton.....33
Disk..	Sel....	Unit M..	4	Sp.B....	Springs..	Float...	.....	Tor.T...	138	37x5	37x5	Wood...	¾ Ell....	.....	Plain.. 4	B&R....	Roll...	Roll...	Winton.....48
Mag...	.....	.....	.....	B-Worm	Springs..	Semi-F..	Own.....	Tor.A...	110	34x4	34x4	Wood...	Cant....	.....	Plain.. 2	.....	Ball...	Roll...	Woods Dual Power.....
Disk..	Sel....	Unit M..	3	Bevel...	Springs..	Semi-F..	Timken...	Springs.	126	.....	.....	Wood...	¾ Ell....	Stewart.....	Plain.. 2	Ball....	Roll...	Roll...	Yale.....

Bevel, Sp.B. **Car Drives Through:** Radius Rods, Rad.Rd; Torsion Tube, Tor.T; Torque Arm, Tor. A. **Rear Axle:** Floating, Float; Semi-Floating, Semi-F; Three-quarter Floating, ¾ Float. **Make of Axle:** Weston-Mott, West.M; Walker-Weiss, W.Weiss. **Rear Springs:** Elliptic, Ell; Three-quarter Elliptic ¾ Ell; Semi-Elliptic, S-E; Cantilever, Cant; Platform, Plat; Transverse Semi-Elliptic, Tr.S-E. **Bearings:** Roller, Roll; Ball and Roller, B&R; Ball and Plain, B&P; Ball, Roller and Plain, BR&P; Cup and Cone, C&C. **Make of Speedometer:** Johns-Manville, Johns-Man. **Fuel Feed;** Stewart Vacuum Tank, Vacuum.

*Wire special equipment. †Wood optional.

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The Right Idea

THE Syracuse Automobile Dealers' Association has the right idea about running a show. Its IDEA is shown on the opposite page in the form of a letter to members from the show manager and secretary.

This letter urges exhibitors to make their exhibits DISTINCTIVE instead of, as is done in many show cities, commanding them to refrain from decorations in order that all the exhibits may be alike and no dealer appear any better than any other, just like uniformed soldiers, or policemen, or bellboys.

A letter of this kind puts snap into a show, as is apparent to one who has seen past show efforts of the Syracuse dealers. Their exhibit is not big—there is no big building available—but it has snap and dash and is an all-around show.

The letter urges flowers, ribbons, spare tires, and those little touches here and there that MAKE an exhibit. There is such a thing as being too elaborate, it is true, and sometimes too much ribbon spoils a pretty car, but with the tendency in so many cities toward rules that make for the MEDIOCRE it is better this winter to go too far than not far enough.

Syracuse has the right idea.

The Commercial Garage

FOR the man who wishes a subject for business study and possible profits there is a field in what is becoming known as the "commercial garage." This is a garage for commercial vehicles exclusively, and preferably for trucks of fair size.

A number of these have been opened lately and there should be a profitable opportunity in this line in cities where there are large numbers of trucks in operation by stores and where garaging facilities are not adequate.

Stores in most cities of any size use commercial cars and not all of them maintain garages of their own. At present some of these are being kept in garages which also store motor cars, but the combination of the two types of vehicle is not always advantageous.

For one thing, a truck takes more room than a touring car. It also requires a different kind of service. The commercial garage must be equipped to give quick and efficient repair work, and the object of the business, aside from storing the truck nights, must be to see that the vehicle is kept in service the greatest possible number of working hours. This, of course, necessitates good shop service.

The proprietor of a commercial garage is dealing with business men and he must operate a garage in a business way. The slipshod methods that prevail in some garages will spell ruin. On the other hand, the well-operated commercial garage will by its methods have much in its favor because of the appeal that will be made to the business man by businesslike conduct.

Say Something

IN sending sales letters to prospects it is highly advisable to say something. If there is nothing to say, why write? But—there is always something to say even though the letter writer fails to say it.

Although it is expedient to boost winter motoring now and to picture the joys of spring touring later on, and to make these appeals in many forms at many different times, the letter writer should not overlook the fact that the prospect is interested in what he pays for.

This means that the prospect wants to know why he should buy your car rather than some other car. There are sales points to your car or else you had better drop the agency. These sales points should never be forgotten, no matter how worn and frayed they may become. To the prospect they are new.

One dealer recently sent out a letter—signed by his sales manager—in which it was stated that recent letters had incurred the ire of the dealer because they hadn't been telling anything, whereas the car contains hundreds of sales points. The letter writer apparently had worn out the story— in his own mind.

The letter that followed the "boss's ire" was filled with sales points. It was convincing. It contained facts that would help a prospect part with his $2,000.

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THIS LETTER is the subject of an editorial—The Right Idea—which appears on the opposite page. Read the letter, then read the editorial.

J. W. LEE, JR.
PRESIDENT
S. SILVERMAN
VICE-PRESIDENT
T. A. YOUNG
SECRETARY-TREASURER

THE 1917
NINTH ANNUAL
AUTOMOBILE SHOW
OF THE
SYRACUSE AUTOMOBILE DEALERS ASSOCIATION, INC.

DIRECTORS
G. H. NORRIS
W. R. SHAW
B. W. MOYER
T. G. MEACHEM
SHOW MANAGER
H. T. GARDNER

OPENS MONDAY, FEB. 19
CLOSES SATURDAY, FEB. 24

ADDRESS ALL COMMUNICATIONS TO
H. T. GARDNER, MANAGER
626 UNIVERSITY BLDG.
TELEPHONE WARREN 4933

AT THE STATE ARMORY
SYRACUSE, N. Y.

To Exhibitor:

An Automobile Show with the ordinary display of cars that spectators can see anytime by standing on a street corner, is costing you money!

Special painted cars with upholstering to match,-- shiny wire wheels,-- an extra tire mounted on the rear,-- keeping the lights on inside of the closed cars, all play important parts in hypnotising the prospect to buy the product you represent.

Keep down the number of cars shown in your space and specialize on making your exhibit yell INDIVIDUALITY!!

Use cut flowers on center tables,-- be liberal with broad silken ribbons,-- make a prominent appeal to the eyes of every visitor to the Auto Show by attracting their attention before they get by.

Let every exhibitor make up his mind to add class and a tone of ultra-refinement to the event by doing something to let people know you are alive.

The management of the Ninth Annual Auto Show will provide the scenic background and proper atmosphere to place the visiting public in a receptive mood. Don't let 'em get away!!

Thank You.

SYRACUSE AUTOMOBILE DEALERS ASSOCIATION

Per H. T. Gardner
Show Manager.

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Winter Business

If You Do Things

On These Two Pages

are things that men have done to get Winter Business. These men have succeeded. Study carefully these letters and ads. Use some of the ideas in YOUR business. You can make money this winter if you DO THINGS.

The American Bronze Co. is making this offer to assist dealers

Below is a copy of a circular letter that we will multigraph for you on your own stationery. Send us 100, 200, 300, 400 or 500 of your letterheads and your order for a "6-54" Assortment of Non Gran Bars (see page 7 inclosed folder). The letters and Assortment will be sent immediately. Assortment—$16.20. Letters—No charge. Send money order or your own check will be satisfactory. This offer is for immediate acceptance only.

Following is the letter we will multigraph for you on your letterhead.

THE LETTER

Dear Sir:

Your car will perform like a new one next year if you have us overhaul it and if necessary regrind the valves, remove carbon, refit main bearings, replace piston rings, repack pumps, tighten joints and replace worn bushings.

It's surprising how different a car will run after this kind of attention. You know a piston pin bushing that has worn enough to be slightly loose will cause serious hammering and damage to other parts if not attended to promptly. We use only Non-Gran Bronze for making new bushings. This means an extraordinary length of time before these bushings will need renewing. Non-Gran Bronze is used in the building of the "Marmon," "Mercer," Locomobile," "Haynes," "Stearns," "Kissel-Kar," "Phianna," "Dorris," "Curtiss Aeroplanes," etc. You get this same stand-up bearing quality in your car when you bring it to us for overhauling.

Now is the time to do this while we are not rushed and you are able to spare your car. Get ahead of the rush which comes every Spring and be ready to enjoy the first fine day of Spring with a car that runs smoothly and powerfully and without road trouble.

A STITCH IN TIME SAVES NINE.

Very truly yours,

(DEALER'S NAME AND ADDRESS.)

Using this letter helped fill the cash register with real money—Try it

COLLECTION LETTER

The Reo Service Company will close its first fiscal year on December 23. Despite the general business depression which has prevailed since the business was established, the company has prospered and we take this opportunity to thank you and the many others who have patronized us during the year, for contributing so materially toward our success.

During the year, we have tried to meet the wants of our patrons by constantly increasing our facilities. We believe that we have succeeded in building up a business that fills every requirement of a first class service station. Our work has met with general satisfaction; a splendid compliment to our thorough and expert workmen. We are looking forward to another year's business with hopes of still greater success and trust that we may again include you among our many customers.

In order to maintain the high standards of our service, we must ask our patrons to co-operate with us. We have a large number of small accounts on our books which in the aggregate amount to a considerable sum. We desire to close these accounts by the end of our year and we are asking those who are indebted to us to endeavor to pay us before that time. It is needless to assure you, that the favor would be appreciated.

Yours truly,

THE REO SERVICE CO.,

Hartford, Conn.

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THIS WARNING →
was used in an ad by the dealers in Hartford, Conn., as a means of promoting Winter Business.

This Man's Car Sales Do NOT Fall Off In the Winter

SALES LETTER NO. 1

Mr. E. Smith,
Hartford, Conn.
Dear Sir:

In a conversation at the City Club the other noon a prominent business man remarked, "The next time I buy a car I am going to try it out in bad weather over bad roads." "Why's that?" asked his companion. "Well," he replied, "Most all cars perform well under good conditions. Here's this snowstorm now; it stands to reason that if a car will pull and show power through this snow; if it will ride easily on these rough roads; if it steers easily and has easy control, it will be all the better in ordinary use, won't it?"

When I overheard this it opened my eyes, because the performance of two REO demonstrators the morning after the big fall of snow was fresh in my mind. These two REOS were among the very first vehicles of any sort down Albany Avenue from beyond Blue Hills. The way they pulled through the deep, heavy snow without any apparent hesitation—without any distress whatsoever, and the way they handled through the piled up drifts was a showing of which I was mighty proud.

I truly wish I could offer to duplicate this performance for you; but the snow has become packed down and traveling is fairly good about the city. However, the streets are rough and an easy riding car will prove itself completely on them. Moreover, we can find plenty of hard pulling in the outlying sections, so I am extending to you an invitation, yes urging you to let me show you the REO under these extreme conditions to test its power, riding and ease of control.

Set a time to meet your convenience and let me know by 'phoning Charter 4559.

Yours expectantly,
RUSSELL P. TABER,
Hartford, Conn.

SALES LETTER NO. 2

Mr. John Green,
Hartford, Conn.
Dear Sir:

A few days ago I invited you for a REO demonstration over the rough, heavy roads which the recent snowstorm has left us. I am repeating this invitation because it will be almost impossible to get a better chance to really test a car than is offered us right now.

Please understand that I want you to have a comfortable ride. I realize that the weather is not very pleasant; but I will make the demonstration warm and enjoyable with plenty of robes and coats, so that you will suffer no discomfort.

One of my salesmen will call and personally invite you to see the REO perform under these extreme conditions.

Yours respectfully,
RUSSELL P. TABER,
Hartford, Conn.

WARNING!

THE FOLLOWING

RESOLUTION

WAS ADOPTED BY THE

HARTFORD AUTOMOBILE DEALERS' ASSOCIATION

DECEMBER 22, 1916

WHEREAS, business and social life having become so dependent upon motor cars that any decrease in the supply would mean serious inconvenience to the members of any community, and;

WHEREAS, the congestion of freight transportation throughout the country, particularly the Eastern portion, having become so great that railroad officials have found it necessary, in a great many instances, to establish embargoes which, at various periods, make it impossible to ship automobiles into this section of Connecticut, and, further, the shortage of freight cars and express cars having made it difficult to obtain equipment for shipping automobiles, and;

WHEREAS, these conditions will be many-fold worse during the coming winter, making very uncertain the dates of shipments of automobiles, and almost impossible the determining of the dates of delivery, and;

WHEREAS, we, The Hartford Automobile Dealers Association, knowing these unfavorable conditions to exist, and knowing that serious consequences may result therefrom, and believing it our duty to warn the automobiling public of this section and those who contemplate purchasing new motor cars for delivery next Spring, that unless the present congestion of freight traffic in this country be greatly relieved in the immediate future, there will be a shortage of automobiles throughout New England, particularly in Connecticut, the coming Spring;

THEREFORE, be it resolved that we employ adequate means to notify the public of the true conditions and warn them to delay no longer than is absolutely necessary, their purchases of motor cars, and that we advise them to place their orders early to protect themselves, if possible, on deliveries in the future.

HARTFORD AUTOMOBILE DEALERS ASSOCIATION.

MEMBERS:

The Harrington-Hudson Co.—Hudson.
E. M. Jennings Co.—Mercer, Jeffery.
Geo. H. Gabb—Haynes, Auburn.
The Milburn Car Co.—Milburn.
Palace Garage—Oldsmobile.
A. C. Hine Co.—Chalmers, Oakland.
Keamey Truck Sales Co.—Vim, Selden.
W. N. Barrett—Metz.
The Harry Starkie Auto Co.—Chevrolet.
Kingsbury & Wetherell, Inc.—King.
R. D. Britton Co.—Velie, Allen, Atterbury Truck.
Hartford Motor Car Co.—Dodge, Hal.
Russell P Taber, Inc.—Reo.
Colonial Auto Co.—Studebaker.
Brown, Thomson Co.—Cadillac.
Universal Auto Co.—Franklin, Scripps-Booth.
A. E. Parsons—Detroit, Locomobile.
Packard Motor Car Co—Packard.
The Reid Motor Co.—National.
Ed. S. Clark—Paige.
Charter Oak Motor Car Co.—Chandler, Hupmobile.
Electric Auto Station—Ohio.
Hartford Buick Co.—Buick, Baker.
Geo. D. Knox—Peerless.
S. A. Miner—Pierce-Arrow.
The Britton Co.—Stearns, Federal Truck.
Elmer Auto Co.—Ford.
Palace Auto Service Co.—Mitchell.
Capitol City Auto Co.—Winton.
The Thrall, Colton Auto Co.—Kissel.
Willys-Overland Inc.—Overland.
The Heublein Garage Co.—Cole, Owen, Liberty.
Knox, Whaley Co.—Maxwell.
Acme Motor Sales Co.—Marmon.
Frank G. Robins Co.—Saxon, Autocar.
Hartford Apperson Motor Co.—Apperson.

The situation is indeed serious enough to warrant this unprecedented action, and we suggest that all intending purchasers of pleasure cars and trucks place their orders NOW and take delivery as soon as it can be arranged.

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Accessories & Supplies



ATLAS WELDING AND CUTTING EQUIPMENT

Atlas Welding Works, Rahway, N. J.

This complete welding and cutting outfit for the repair shop includes a special torch in which the gas pressure is readily adjusted by means of a valve control located near the handle, seven tips and three injectors that permit the flame to be adjusted for welding the thinnest sheets to 8 in. stock. Due to the design, flash-backs are practically eliminated, it is said, and the gas consumption economical. The model A-11 includes the welding torch, with 7 tips and 3 injectors; complete with regulator and goggles, but without gas tanks.

VAN SICKLEN LIGHTING SYSTEM

Beckley, Ralston Co., Chicago. PRICE, $4.

A dimmer and intensifier for the Ford headlights when operated from the magneto. A resistance coil and controlling switch mounted in a casing at the top of the steering post and the addition of three wires into the lighting circuit complete the installation. Three positions of the switch give normal light, concentrated current to one lamp, both lamps dimmed. The installation may be made in 12 min.

LEXINGTON SAFETY SIGNAL

Lexington Signal Co., Lexington, Ky.

The intentions of the driver are made known by means of electrically operated signals, one at the front and one at the rear. Each consists of a metal casing containing a black arrow that is rotated to indicate his intention. The rear signal has a white hand bearing the word "Stop," and is thrown into a horizontal position and illuminated; the front light is so constructed that the driver may see the operation of the arrow and the lights. A steering-post switch controls both.

VAN DORN ELECTRIC TOOLS

The Van Dorn Electric Tool Co., Cleveland. PRICE, Type D.A.-OX-Code 8400 portable electric drill, $70; Code A-6300 grinder, $63.

A complete line of electric drills and grinders for the repairshop. Many types of portable drills are offered, type D.A.-OX-Code 8400 operating on either direct or alternating current, and will take drills from 0 to ⅜ in. The grinder is driven by a 1/3-hp., 60-cycle, alternating-current motor, and is adapted for all kinds of light grinding.

HANDY SERVICE CABINET

Stevens & Co., 375 Broadway, New York. PRICE, $5.

Screws, nuts, bolts, repair parts, spark plugs and other small parts are conveniently stored in this cabinet. A substantial oak frame carries fifteen drawers; twelve 3 x 3 x 12 in., and three 6 x 3 x 12 in., the sides and bottoms being galvanized steel. Each drawer is fitted with a combination pull and card holder, and the side is labeled for a stock record. Cabinets are interchangeable and may be made into sections of any size.

YANKEE TIRE PUMP

Apex Electric Mfg. Co., 1410 West 59th St., Chicago. PRICE, $5.

This plunger tire pump clamps onto the runningboard, is operated by a lever handle, and offers an emergency necessity, whether the car be equipped with a power pump or not. When not in use, it may be folded compactly. It is supplied complete with hose and gage.

FRIESTEDT HYDRONIZER

Friestedt Rim Contracter Co., 2934-2938 West Lake St., Chicago. PRICE, $6.

Moisture is introduced into the intake manifold of the Ford with this special manifold, carrying a glass water container, the container is so connected to the manifold that a part of the intake air is passed through the water, taking some of the moisture with it. A tube connects the air space at the top of the container with the manifold; another tube leads from the atmosphere to the bottom of the container, and the amount of air passing may be regulated by a ball valve. The attachment may be made in a short time, requires no machine work and the device is sold on a 10 days' free trial.

YALE TRIPLEX BLOCK

Yale & Towne Mfg. Co., 9 East 40th St., New York. PRICE, 1-ton, $45.

A chain hoist for the repair shop, where safety, speed and ease of operation are most essential. The feature is the durability of construction; the gear and pinion is made from a solid steel blank carefully finished with large, cut teeth; the chain is steel, electrically welded at the side of the link; the hook is a steel forging, designed to open slowly when seriously overlooked, and one man can lift a load of two or three times the rated capacity of the block.

ANCHOR GLASS-INCLOSED TOP

Anchor Buggy Co., Cincinnati. PRICE, Buick, D-45, $150; D-44, $115.

A demountable top for the Buick model D-45 or D-44. It comprises a rigid and substantial framework, covered with waterproof material, fitting onto the regular body irons of the car without overhang, and having doors and windows that harmonize with the car. All doors are equipped with drop glass ventilating windows and the side panels and windows may be removed. The installation requires no body work.

C.-W. GUN PRIMER

Crum-Wiley Mfg. Co., Peru, Ind. PRICE, nickel plated, $2.50; polished brass, $2.35.

By means of a pump located on the dash, gasoline is drawn from the feed line and forced into the intake manifold in the form of a spray. The installation requires the insertion of the pump connection in the gasoline line; the installation of the pump on the dash; the drilling and tapping of a hole in the intake manifold and the connection of the three by a pipe line. The feature of the device is the spray plug at the manifold connection that acts as an atomizer and mixes the gasoline with air before injection.

KICKLESS KRANK FOR FORDS

Thompson Mfg. Co., Des Moines, Ia. PRICE, $4.50.

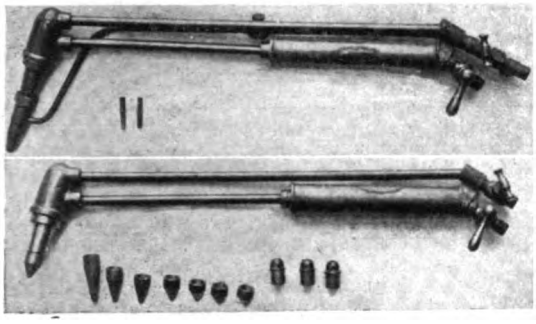
A special crank for the Ford for preventing injury from backfire. The Ford crank is removed and the special crank bolted on in its place. It has a locking and releasing device, whereby the crank and crankshaft are disengaged should the engine backfire. When not in use the crank is held up. It may be installed in 15 minutes with a wrench.

INGHAM'S PERFECTION POLISH

Perfection Polish Co., Waverly, N. Y.

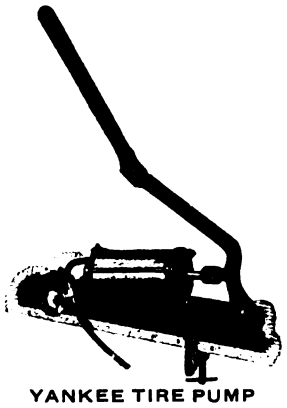
A liquid, used in conjunction with water, for cleaning and polishing varnished surfaces. After washing the car the polish is applied with a cloth and rubbed in.

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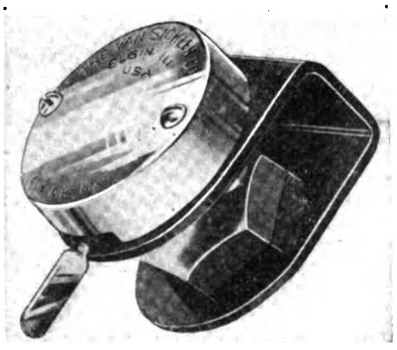
ATLAS WELDING AND CUTTING EQUIPMENT

Above—The cutting torch. Below—The welding torch. Note the valves on the handle that permit easy adjustment



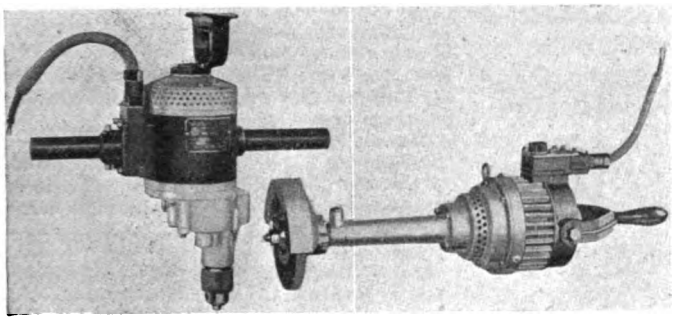
YANKEE TIRE PUMP

A clamp holds this lever operated plunger pump to the running board



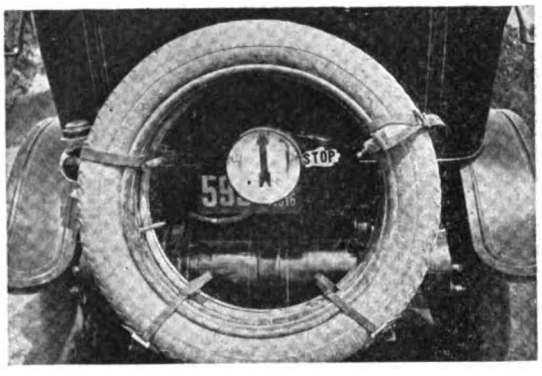
VAN SICKLEN LIGHTING SYSTEM

Offers a ready means of control for the headlights of the Ford



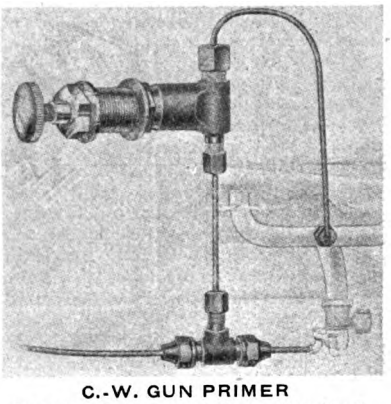
VAN DORN ELECTRIC TOOLS

Left—The portable drill will operate on either direct or alternating current, and will take any drill up to ⅜ in. diameter. Right—The grinder runs on alternating current only, and is suited for light grinding



LEXINGTON SAFETY SIGNAL

Electric signals make the driver's intentions known



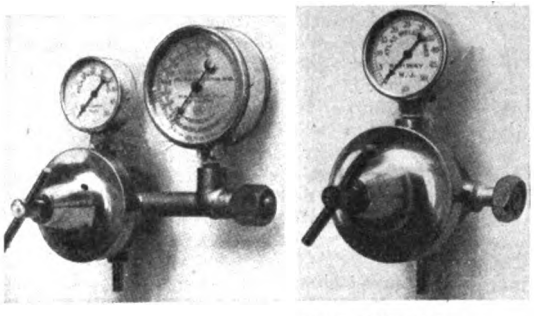
C.-W. GUN PRIMER

Gasoline is injected from the feed line into the intake manifold



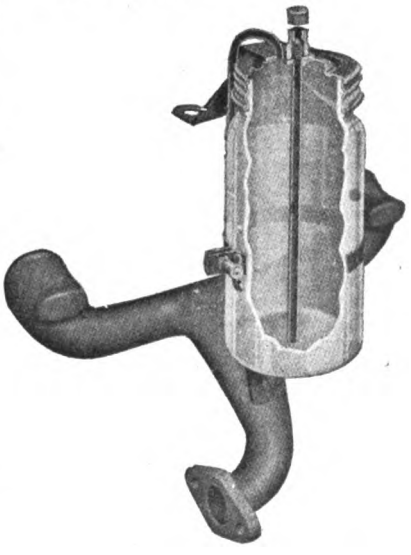
HANDY SERVICE CABINET

Systematic storage of small parts is effected by the use of this cabinet



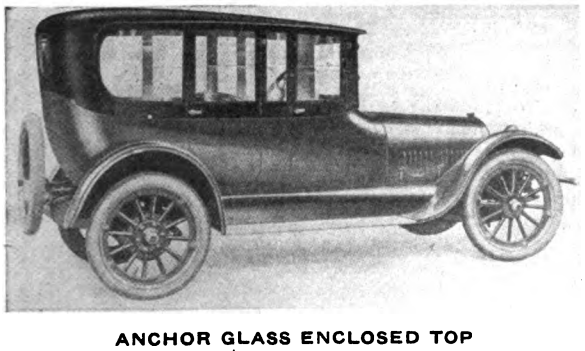
ATLAS WELDING AND CUTTING EQUIPMENT

Left—The oxygen welding regulator, with large sensitive diaphragm and registering gage. Right—Acetylene regulator



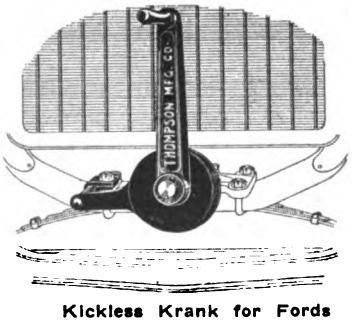
FRIESTEDT HYDRONIZER

An attachment for the Ford, permitting moisture to be introduced into the intake manifold



ANCHOR GLASS ENCLOSED TOP

Demountable tops are made both for the Buick model D-44 and D-45. They fit onto the regular body irons



Kickless Krank for Fords

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The RETAIL NEWS.

MIDDLE WEST

The E. T. Radcliffe Automobile Agency, Galesburg, Ill., has removed to new headquarters at 571 East Main Street. The former location was on North Cherry Street. Expanding business forced a larger plant. In addition to the distribution of the Studebaker and Cole cars in the central Illinois territory, Radcliffe will maintain a repairshop, showroom, storage department and accessory and supply store.

John McKee, Springfield, Ill., has commenced the erection of a modern garage at 414, 416 and 418 North Sixth Street. The plant will have a frontage of 150 ft. and will be one story in height. In addition to maintaining a repairshop and storage department, a complete line of supplies will be carried.

J. R. Henton has retired as a member of the garage firm of Henton-Roberts Sales Co., Decatur, Ill., and R. H. Roberts becomes sole owner. The firm will be known under the old name. The company distributes Chevrolet and Enger cars in the central Illinois territory.

Guy Ferre, Decatur, Ill., owner of the Motor Car Supply Co., has leased the Mattes Building, 321 North Main Street, and will utilize it as a salesroom and service station for the Hudson, of which he is distributer for the central Illinois territory. The building will be remodeled. A line of supplies will be added. The plant will be ready this month.

Edward H. White, Rockford, Ill., has taken over the accessory business of the Keyt-Erb Auto Co., corner of Main and Cedar Streets. He was formerly with the Emerson-Brantingham Co., of Rockford. The Keyt-Erb Co. specialized in accessories for Cadillac cars. White will add a full line of accessories, adaptable to any make of car, and will expand the business in other ways.

The Standard Automobile Co., Peoria, Ill., has been incorporated to deal in automobiles and accessories with capitalization of $1,000. Incorporators—G. A. Schilling, R. O. Kinter and W. M. Gish. The former has been named president of the company. A service station has been opened in East Peoria, and Ford agencies, formerly operated at that point and at Green Valley, will be in charge of the Standard company hereafter. The Illinois Auto Sales Co., which is an adjunct of the Standard, has also been incorporated with Mr. Schilling as president. A garage will be opened at 905 South Adams Street. There will be storage space for 300 cars.

The White Motor Sales Co., Columbus, Ohio, has been organized to handle the White line in Columbus, including both pleasure cars and motor trucks.

Alva Knoff and C. O. Hawk, Coshocton, Ohio, have opened a sales agency and garage on Walnut Street. The concern has the Chevrolet agency.

The Mackemer-Kelly Co., Peoria, Ill., authorized Ford agents for Peoria and surrounding territory, has just opened its new accessory department at 817-819 Main Street. The spacious quarters of the company there afford them every opportunity not only for displaying cars but for the sale and distribution of all parts and supplies necessary for Ford machines. The company has also opened a new display room, where a complete line of new Ford models are on exhibition. It has also inaugurated a new easy-payment plan.

C. M. Lund, Harrisville, Mich., local Ford dealer, will erect a new garage and showroom at the corner of Second and Main Streets, which will be ready for occupancy early next spring.

Barnes & Duell, Elsie, Mich., have sold their garage to Alma parties, who will take immediate possession.

Walle & Johnson, Ludington, Mich., who recently took over the Hudson Garage, will handle the Maxwell.

L. A. Wood, Clare, Mich., has purchased Guy Georgia's interest in the Clare Garage and is also proprietor of the new garage at Farwell. Georgia now takes charge of the repair department at the Hampton Garage.

The Firestone Service Station, Jackson, Mich., has been purchased by L. H. Nowlin.

Harry Garwood and Ellis Wright, Alpena, Mich., have opened a garage in the building formerly occupied by the Huron Garage Co. on Chisholm Street.

Clyde Phillips, Charlotte, Mich., has purchased half interest in the repairshop business of Thompson & Phillips.

The Fling Auto Co., Flint, Mich., has been organized to handle the Dort agency for the counties of Lapeer, Genesee and Shiawassee. Construction work has been started on a salesroom and service station at 917 South Saginaw Street, which will be ready for occupancy about March 1.

H. D. Peck and Edward Facteau have opened a Ford agency in Cleveland. Edward Facteau was the assistant superintendent of the Cleveland branch of the Ford Motor Co. for the past 8 years.

E. Springer, Freeport, Ill., has removed his garage from 25 Locust Street to 145 Mechanic Street, due to the necessity for securing larger quarters. The firm is known as the Springer Auto Co. and operates a repair and service department and also carries a line of supplies and accessories.

The Herrick Automobile Supply & Service Co., Champaign, Ill., has opened an extensive branch house at 204 East Monroe Street, Bloomington, Ill. An old building of three stories has been remodeled in which supplies and accessories of all kinds will be carried, giving the firm the largest stock in the city. A new building was erected for the service station. No charge will be made for towing in disabled cars, changing tires, etc.

C. A. Triphagen, Lansing, Mich., has disposed of his garage and sales agency.

M. E. Phillips, Bay City, Mich., and **J. H. Tryon,** Detroit, have taken the Dodge agency in Lapeer. Headquarters have been established at the Lapeer City Garage, where a showroom will be maintained.

The Fritz Garage, Charlotte, Mich., has completed a one-story addition to its garage and has installed a new generator set.

Lee Kellam, St. Johns, Mich., will erect a two-story garage on the corner of Spring and Higham Streets, including a repairshop, storeroom and salesroom.

The H. G. Root Co., Springfield, O., has been incorporated at $25,000 to deal in supplies. H. G. Root, F. B. Woosley, E. D. Stanford, J. M. Rene, and Allen H. Frost are the incorporators.

The Springfield Buick Co., Springfield, O., has been incorporated at $20,000 to sell automobiles by William E. Stevens, Sara B. Stevens, Charles B. Zimmerman, M. Ray Wiekart, and Roy W. Roof.

The Overland Larick Co., Cleveland, has been incorporated at $10,000 to sell automobiles by Jacob J. Larick, John Montana, S. S. Ford, Edgar R. Bayes, and E. M. Kossin.

The Cleveland-Jeffries Automobile Co., Cleveland, has been incorporated at $25,000 to sell automobiles by W. C. Armstrong, Norman Elliott, David L. Shaw, A. M. Klein, and Oscar S. Cramer.

The Blair Auto Co., Cleveland, has been incorporated at $25,000 to sell automobiles by Bert Blair, George Johnston, A. J. Mitchell, S. F. Dunn, and Carl H. Koch.

The Stanley Steam Car Sales Co., Cleveland, has been incorporated at $10,000 to sell motor cars by Lewis W. Thomas, Sophia Z. Thomas, Mildred E. Thomas, Roscoe M. Ewing, and W. B. Alford.

The Standard Equipment Co., Cleveland, has been incorporated at $1,000 to deal in car parts by J. A. Curtis, L. C. Mizer, Frank H. Ewing, A. L. Austin, and W. H. Hodges.

The West-Cleveland Motor & Supply Co., Cleveland, has been incorporated at $10,000 to deal in automobiles and accessories. Ralph T. Brown, John A. Elden, Abraham J. Ullman, Marie D. Wagner, and M. W. Bracken are the organizers.

The Combined Auto & Accessories Co., Cincinnati, has been incorporated at $15,000 to deal in automobiles and accessories. T. C. N. Vance, Frank Cain, E. H. McElroy, George W. Harding, and Thomas L. Michie are the incorporators.

Ratunde Bros., Necedah, Wis., have taken occupancy of a new garage and repair shop.

The Used Car Listing Bureau of Milwaukee has been established by R. J. Willets, Sentinel Building, to buy and sell used cars as a broker only.

Frank Demulling, River Falls, Wis., machinist, implement, and motor car dealer, is building a large shop and warehouse, 30 x 150, two stories and basement, adjoining his present building.

Oscar A. Kuehn, manager of the E. W. Clark Motor Co., Fond du Lac, Wis., has resigned to become cashier of the State Bank of Knowles, Wis. E. W. Clark will take charge of the garage temporarily.

Hoops & Davis, Seymour, Wis., garage and machine shop, have issued notice that owing to the increased cost of materials and labor credit will be discontinued, and all repair work will be delivered for cash only.

The Chair City Vulcanizing Shop, Sheboygan, Wis., has been established at 1219 North Eighth Street by Laack & Schalbe. The building formerly was occupied by the Lion Liner Co.

Daniel Jones, Wild Rose, Wis., now is sole owner of the Jones-Collegan Garage, Miles Collegan having disposed of his half interest to his partner.

Pell Bros. & Co., Bloomer, Wis., dealers in the Maxwell, Kissel, Grant, and Chandler, have completed a new garage, which embodies machine and vulcanizing shops and a battery service station.

The Scotch Oil Co., Madison, Wis., has been placed in the hands of a receiver. The concern was organized a year ago by H. G. Smith, who petitioned for a receiver. A. L. McColum is vice-president and general manager.

The G. A. Gullikson Co., Stevens Point, Wis., took occupancy of its new garage and service building at Strongs Avenue and West Ellis Street on Jan. 1.

The Tiffany Motor Car Co., Chetek, Wis., has been organized by W. H. Tiffany, Frank E. Pitman, and J. W. Bell, and is opening a garage and repairshop in the new fireproof building erected by Tiffany.

Minor Erickson, Frederic, Wis., is building a large addition to his garage and repairshop.

E. W. Johannes, Tigerton, Wis., has sold his garage, repairshop, and supply store to Orrie Williams, Clintonville, Wis., who takes immediate possession. Johannes will devote his attention to his farm implement business.

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The Bergstrom Motor Co., Neenah, Wis., sustained a loss estimated at $2,000 by fire Dec. 15. The building and equipment will be repaired at once.

The Nichoalds Co., Detroit, will open an accessories branch in Indianapolis. T. A. Nichoalds will be branch manager.

George Benham, Detroit, has organized the United States Truck Co. of Michigan, to handle the United States truck.

The Princess Motor Corp. of Delaware has been admitted to business in Michigan and has taken over the Princess Motor Co., which has heretofore handled Michigan sales. Officers of the corporation are O. C. White, president and managing director; I. N. White, vice-president and treasurer; H. C. Dawson, assistant sales and advertising manager.

The Michigan Oldsmobile Co., has incorporated in Ohio for $250,000. The company will move its principal offices to Cleveland, and will establish branches in Lansing, Detroit, Dayton, and Cincinnati.

Arthur Anderson, Morris, Ill., has purchased the J. E. Goode Garage and will hereafter operate it, Goode retiring.

A. R. Fagerhold, Aurora, Ill., has leased the building at 32 South River Street and will operate a garage. His present quarters are at 2 River Street.

The Hancock County Buick Co., Findlay, O., has leased the Jay Ewing Building for ten years and will convert it into a garage and salesroom. The lease starts Jan. 1.

The Amazon Tire & Rubber Co., has added to its dealers Ralph E. Becker, Buffalo, and the Strong, Carlisle & Hammond Co., Cleveland.

Harry Garwood and Ellis Wright, Alpena, Mich., have opened a garage in the building formerly occupied by the Huron Garage Co. on Chisholm Street.

The Service Garage, Grand Rapids, Mich., has been organized by Otto Wilber and Seth Stevens, who have opened a repairshop at 331 Bond Avenue.

Dr. D. E. Seller, Manistique, Mich., has purchased the Anderson building on River Street, which he will remodel and equip as a garage.

Eichhorn Bros., Salzburg, Mich., have taken possession of their new garage and repairshop on Erie Street. The building is 30 x 60.

Day & Storr, Battle Creek, Mich., have rented the first floor of the Empire block for a garage and Chevrolet showroom.

Peter Johnson, Grand Rapids, Mich., has leased the new garage at 438 Jefferson Avenue, S. E.

The Public Service Garage, Ironwood, Mich., has taken the Chevrolet agency.

Bert Keeney, Perry, Mich., has purchased the interest of O. M. Arthur in The Motor Inn.

J. F. Carnes & Son, Battle Creek, Mich., have taken the Dort agency.

J. R. Inskeep, Pontiac, Mich., has purchased a site on Saginaw Street on which he will erect a garage.

MOUNTAIN

B. L. Bowers, Colorado Springs, Col., has been appointed Hupmobile agent for El Paso County.

Lon S. Post and J. A. Christy, Denver, have secured the Glide agency for Colorado and Wyoming, and have opened headquarters at 1240 Broadway.

John H. Rapp, Yuma, Col., has taken the Elcar for Yuma County.

The Simple Oil Engine Mfg. Co., Trinidad, Col., has taken the Aurora demountable truck agency for Las Animas County.

G. W. Linger, Denver, has opened a Mitchell distributing agency for Colorado and Wyoming at 1268 Broadway.

R. S. Garlick, Dawson, N. M., has been appointed Elcar agent for Colfax County.

E. W. Cookingham, Trinidad, Col., has secured the Hupmobile agency for Las Animas County.

W. A. Schwalbert, Denver, now has the Dorris distributing agency for Colorado and Wyoming, with headquarters at 1240 Broadway.

Warriner & Cochran, Denver, Maxwell retail dealers for Denver and vicinity, have added the Aurora demountable truck agency for Denver, Adams, Jefferson, Arapahoe, and Douglas counties.

O. A. White, Aguilar, Col., has taken the Jackson agency for Las Animas and Huerfano counties.

The Colorado Smith Form-a-Truck Sales Co., Denver, a new concern, has secured the distributing agency for the Smith truck, Warner trailers, and Butler portable steel garages for Colorado and part of Wyoming and New Mexico.

J. S. Murray, Walsenburg, Col., has taken the Elcar agency for Huerfano and Custer counties.

The Valley Mercantile Co., Sidney, Col., has secured the Jackson agency for Routt and Moffat counties.

J. K. Lumbar, Rocky Ford, Col., Dodge dealer, has added the Aurora demountable truck agency for Otero County.

Decker & Farr, Greeley, Col., have contracted for the Elcar agency for Weld, Morgan, Larimer, and Jackson counties.

Henry A. Clark, Parker, Col., has contracted for the Elcar for Douglas, Elbert, and Arapahoe counties.

Marshall Bros., Las Animas, Col., Maxwell dealers, have added the Aurora demountable truck agency.

Jasper B. Alcott, Fleming, Col., has been appointed Elcar dealer in Sedgwick County and part of Logan and Phillips counties.

Welton & Voris, Greeley, Col., have secured the Jackson agency for Weld County.

The Westcott Auto Sales Co., Denver, is the name of a new Westcott distributing agency for Colorado, New Mexico, Wyoming, and part of Nebraska. The temporary location is 35 East Colfax Avenue. Baxter Rarie, formerly of the Mulnix & Rarie Auto Sales Co., Grant and Pathfinder distributer, is sales manager of the new concern.

Van Valkenburg & Son, Peetz, Col., have taken the Elcar agency for part of Logan County.

Duvall & Buckman, Golden, Col., have secured the Hupmobile agency for Jefferson County.

The Kempter Motor Co., Denver, Ford dealer, expects to move from 1830 Broadway into a new $10,000 building now under construction at 1917 Broadway.

NORTHWEST

The Detroit Electric has opened a branch in Omaha.

Charles Bond, Des Moines, Ia., has leased the southwest corner of Sixth Avenue and Chestnut Street, 66 x 132, and will at once build a garage, to cost $27,000. This will be the first garage on downtown Sixth Avenue, one of the most important traffic thoroughfares of the city.

F. A. Lawson, Waterloo, Ia., has bought the garage and service station of the Altmyer Motor Co., 617-619 Jefferson Street, which he sold to that company a year ago.

Charles J. Belsky, Dubuque, Ia., has bought out the interest of Harry Kassler in the Kassler Motor Co., and now is sole owner of that concern. He is adding the Kissell.

Everett & Baker, Colfax, Ia., has bought a location on Howard Street for a new garage, 50 x 150.

A. W. Hughes & Co., Littleport, Ia., will build a garage and enter the business.

Groth & Son, Remsen, Ia., will build a new garage.

The Subway Garage, Redfield, Ia., was burned out recently, but all of the equipment was saved.

The Overland-Dubuque Co., Dubuque, Ia., is building a new home, to cost $35,000, at Eighth and Clay streets.

C. E. Bucknam, Lithograph City, Ia., has bought the interest of his partner, B. K. McIlnay, in their garage business.

A. L. Conwell and Orvis Lovrien, Humboldt,, Ia., are starting a new garage and will handle the Stephens.

M. F. Bevans, Batavia, Ia., has bought the Batavia Garage.

Dittmer & Stallbaum, Elkader, Ia., is building a new garage.

Duncan & Smith, Harris, Ia., is building a new garage.

Oscar Nelson, Bode, Ia., has sold a half interest in his garage to Earl Miller.

R. J. Hewitt, Marshalltown, Ia., is opening a new garage at 18 West State Street.

The Martinsen Garage, Audubon, Ia., is being enlarged and improved with new equipment.

PACIFIC COAST

The San Francisco Branch of Guaranty Securities Corp., which finances automobile time-payments, has moved to 1336 Van Ness Avenue. This move brings the corporation into the heart of San Francisco's automobile row—and into a building specially designed and built for it.

The Detroiter Los Angeles Co., Los Angeles, has been appointed as Detroiter distributer for Southern California.

R. W. Southard and J. H. Shinn, Baker, Ore., have taken the agency for Buick and Hudson in the southern Oregon counties.

A. R. Theisen, Seattle, formerly Leavitt official, has been named manager of the Seattle Overland branch.

Howard D. Thomas, Seattle, has secured the coast distribution of the Church gasoline feed.

The Diamond Drill Contracting Co., Coeur d'Alene, Idaho, has signed a contract to sell the Saxon. The automobile department is in charge of Mr. Algee.

The Peerless Motor Sales Co., Spokane, has opened quarters at 808 Third Avenue.

SOUTHWEST

The Senyard Motor Car Co., Little Rock, Ark., has been named state distributer of the Velie. Salesrooms have been opened at 814 Louisiana Street.

The Briscoe Motor Co., Little Rock, Ark., has opened showrooms in The Arcade.

The Little Rock Motor Car Co., Little Rock, Ark., will open salesrooms for the Hudson at 111 West Sixth Street.

F. W. A. Vesper, president of the St. Louis Automobile Manufacturers' and Dealers' Association, and of the Vesper-Buick Automobile Co., has been nominated for a member of the Executive Committee of the Business Men's League of St. Louis, the principal business promotion organization.

N. H. Cooper has joined the sales force of the More Automobile Co., St. Louis. He came from the Chicago Marmon branch.

Marshall Bros., St. Louis, have opened an electric taxicab service, using Milburn cars, which line they also will sell. The company was formerly a large livery firm and has been running a gasoline taxi service. The Entz Automobile and Battery Co. will supply the service for the Milburn cars. A salesroom will be opened.

Frank B. Ottofy, St. Louis, has been named sales manager for the Stearns-Knight Auto Co., distributer of the Inter-State.

Howard Reed, who is a Studebaker distributer, is located in Frankfort, Kan., instead of Frankfort, Mo., as was stated in the December 13 issue of Motor World.

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G. E. Parrish, who has been associated with the Apperson branch in Des Moines, Ia., has been appointed manager of the retail sales department of the Western Motor Car Co. of Kansas City, which handles the Inter-State. A. H. Howard will have charge of wholesale sales, while F. G. Bader will continue as local manager. The service department will remain in charge of Gilbert Bader.

The Bush-Morgan Motor Co., Kansas City, Mo., which handles the Paige, will distribute the Dort. The territory embraces the western half of Missouri and all of Kansas. The Howard & Murphy Motor Co., which formerly handled this car, will hereafter confine its selling efforts to the Hupmobile.

The Buick Kansas City branch, between July 1, 1916, and September 1, sold the entire 7000 cars allotted to this office for the year. J. Frank Martin, manager, declares that he could sell 14,000 Buicks if he could get them. Of the number sold, approximately 5500 went to Kansas buyers.

The Greenlease Motor Co., Kansas City, Mo., which has the distinction of having handled one line exclusively for eleven years, the Cadillac, is planning to begin a new building at Thirtieth Street and McGee Traffic Way immediately after the first of the year, and hopes to be installed by July 1. A count has shown that 12,000 cars pass this corner daily.

J. W. Barnhisel, Kansas City, Mo., has resigned as secretary of the Motor and Machinists Supply Co., and will open the Kansas City office of the General Tire and Rubber Co. of Akron, Ohio. Quarters at 1513 Grand Avenue are now being fitted up. The firm will cover Western Missouri, Kansas, and Oklahoma. Barnhisel began business seven years ago as one of the original incorporators of the Motor and Machinists Supply Co.

H. C. Reckewet, Kansas City, Mo., has succeeded J. W. Barnhisel as buyer for the Motor and Machinists Supply Co.

The Western Motor Co., Kansas City, Mo., is preparing to move into its new quarters on the fifth floor of the new Firestone building. The company will occupy one-half of the fifth floor.

The Gustin-Bacon Mfg. Co., Kansas City, Mo., has let the contract for a new service station at 27th, McGee, and Trafficway, two stories and basement.

E. E. Daugherty, Neodesha, Kan., who sold his supply business several months ago, will open a new establishment in that city in February.

The B. F. Goodrich Co., Akron, Ohio, is said to be planning to open a branch in Lincoln, Neb., for distribution in the South Platte district. It is possible that the company's branch office at Salina, Kan., will be enlarged this spring.

L. A. Boundstone, who for the last year has been connected with the Maxwell Motor Co.'s plant in St. Louis, has been appointed manager of the Kansas City retail department, succeeding G. B. McLaughlin, who resigned Dec. 15. McLaughlin plans to engage in business for himself shortly after Jan. 1.

The Kansas City Auto Parts Co., Kansas City, Mo., is planning to open a number of branch stores in Missouri. One of these may be located in Boonville.

Leonard N. Seaman, Burlingame, Kan., has bought the Santa Fe Trail Garage.

M. Love, Maxwell dealer at Dexter, Kan., has leased quarters for a repairshop.

T. Woods, W. Linhard and **C. Gatz,** Sublette, Mo., are building a garage and blacksmith shop.

Thomas Cooper, Ardmore, Okla., has opened a branch of his Ford and accessory business in Ardmore.

A. E. Fennimore, Fargo, Okla., is erecting a new garage.

The Brooks-Franklin Co., Oklahoma City, Okla., Scripps-Booth dealer, will move soon to 909 North Broadway.

The Capitol Motor Sales Co., Oklahoma City, Okla., has opened salesrooms at 21 and 23 West Fifth Street; it is Briscoe and Haynes dealer.

Krebs & Hensberger, Thomas, Okla., have bought the Buick Garage from J. A. Nicholson.

Gust Rutenbeck, Lincoln, Neb., former game warden, will organize a company and open a garage.

Sampson Bros., Malta Bend, Mo., have taken over R. C. Potter's garage.

J. L. Enyart, McFall, Mo., will soon occupy a new garage.

Geo. D. Casteele, Mound City, Mo., has reopened the garage formerly operated by C. E. Taylor.

Avery Howard, Nevada, Mo., who recently sold his garage to D. S. Wiles, has started a transfer business, and will handle the Reo.

Thomas Davidson, Odessa, Mo., has bought the garage and accessory business of J. W. Colvin. Gilbert Davidson will be manager.

L. H. Higginbotham, Seneca, Mo., has bought the Stone Garage and has moved his livery business to it. Clyde Chandler, former manager, will remain in Seneca.

R. G. Jackson, Eureka, Kan., held recently a formal opening of his new garage and service station; he is dealer in the Buick, Hupmobile, and Chevrolet. Buick buttons and pennants were distributed. The Eureka band and the Ladies' Aid Society of the Lutheran Church assisted.

The Lyon Auto Co., Centralia, Mo., is having an additional garage erected.

Slinger & Bird, Hamilton, Mo., Ford dealers, will soon occupy their new South Main Street garage.

The Diamond Mfg. Co., Hutchinson, Kan., has been incorporated at $48,000 to make supplies and polish. Among the incorporators are C. L. McKittrick, R. H. Hammond, and C. H. Bayfield.

The Southern Automobile Co., Joplin, Mo., Charles F. Langston, manager, opened its new garage, repairshop, and salesroom Jan. 1.

The Western Motor Co., Kansas City, Mo., moved Jan. 1 to the Firestone building.

A. F. Graves, King City, Mo., will soon occupy a new garage.

W. O. Stonum and **Fred Elliott,** Lamar, Mo., will soon open a garage.

Mark Weidenheimer, St. Francis, Kan., has opened a tire repairshop.

"Cap" Miller, Sabetha, Kan., has bought the garage building and equipment of Fletchall Bros., including the machine shop; he will build a modern machine shop. Edward Fletchall and son, Lonnie, continue with the establishment.

John Jordan, Savannah, Kan., has bought equipment for his garage, which will be opened soon.

The Buser Auto Co., Seneca, Kan., has leased new quarters, which are being remodeled.

Edward E. Banks, Kansas City, Kan., blacksmith, will open a garage early in the year at 3009 Strong Avenue.

G. L. Hudkins, Salina, Kan., Ford distributer, will add a second story to his garage, using the first floor for a salesroom.

F. J. Clinkenbeard, Carthage, Mo., is having a salesroom erected.

Kansas City accessory dealers state that there has been extensive buying in the last few weeks, in anticipation of further advances in price, which car owners are anticipating. They say that the past sixty days have been the best for this season of the year ever experienced by the trade in Kansas City.

SOUTH

The White Tire Co., Jacksonville, Fla., has opened up at Julia and Forsyth Streets. It will deal in tires.

G. C. and L. D. Kirkmyer, Richmond, Va., have leased 918 West Broad Street as a salesroom for the Overland.

W. M. Perryman, Atlanta, Ga., has joined the sales force of the W. J. Dabney Implement Co. and will sell the Paige.

The Pierce Motor Car Co., Birmingham, Ala., has been organized to distribute the Dort in 56 counties in Alabama. The salesrooms are at 100 North Eighteenth Street. R. G. Pierce, a real estate dealer, is president, and C. L. Pierce is sales manager.

The Anderson Motor Sales Co., Birmingham, Ala., is now located at Avenue B and Twenty-first Street. Anderson cars are sold.

The O'Rourke-Muller Co., New Orleans, has taken the agency for the Vim trucks.

The Abbott Automobile Co., New Orleans, has added the Chandler.

The Standard Auto Co., Memphis, Velie distributer, is permanently located at 111 Monroe Avenue.

EAST

The Deicher, Harper Co., Inc., 29 South Charles Street, Baltimore, has taken over the business of H. H. Hay, distributer of the D. E. truck. Irving Deicher is president and Laurence Harper secretary. The new company covers 11 states, everything south of the Mason-Dixon line. W. K. Bradbury, who came to Baltimore about a year ago and has been selling G. M. C. trucks, is manager of the new company, which also controls the distribution of the Troy trailers.

The Southern Tire Sales Co., 32 East 20th Street, Baltimore, has reorganized. H. James Lepper, formerly sales manager of the Dreadnought Tire & Rubber Co., is president and general manager; M. F. Horner, vice-president and treasurer, and R. S. Geiwitz, secretary.

The Tire Co., Baltimore, J. E. McGraw, president and general manager, has opened a new branch at 135 West Mt. Royal Avenue.

E. K. Hertford, for a brief time at the Overland distributer's in Philadelphia, has become sales manager of the Motor Car Co., Baltimore, Overland and Willys-Knight distributer.

The Judge Automobile Co., Spring Valley, N. Y., has taken occupancy of a new two-story building, 35 x 200, with a plate-glass front and up-to-date sales equipment. Joseph Judge is the proprietor.

The Wolcott Motor Co., Inc., Corning and Elmira, N. Y., which has handled the Pierce for 10 years, has taken the Binghamton territory, succeeding to the contract of the Davidge Motor Car Co. Temporary quarters have been opened at 201-3 Water Street, with E. H. Pearsall in charge of sales and Ralph Ives in charge of service.

The Falls Tire & Rubber Co., Philadelphia, has moved from 633 to 679 North Broad Street.

The Keystone Auto Top Co., Philadelphia, has changed its quarters from 661 North Broad Street to Fairmount Avenue, west of Broad Street.

The Motor Parts Co., Philadelphia, has leased the three-story building at 818 North Broad Street.

Edward N. Stimson, formerly in charge of the Philadelphia branch of the Miller Tire Co., has been made manager of the Lancaster branch of the Packard Motor Car Co. of Philadelphia.

The Henry J. Perkins Co., Springfield, Mass., is erecting a new garage.

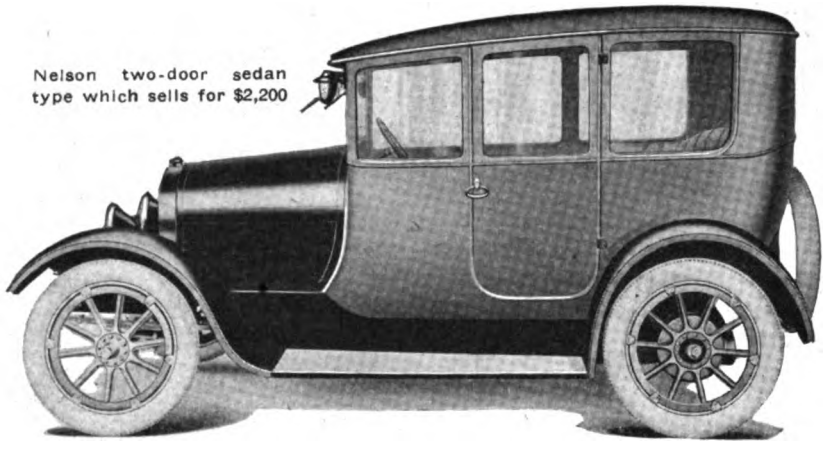
Kenneth B. Charlton, Holyoke, Mass., has been granted a permit for a garage.

Albert Dix, Pride's Crossing, Mass., is building a garage.

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2200-Lb. Nelson Sedan Lists at $2200

Chassis and Body Distinctive Throughout



Nelson two-door sedan type which sells for $2,200

A FIVE-PASSENGER sedan model weighing but 2200 pounds with the tanks empty and selling for $2,200 is being produced by E. A. Nelson, designer of the Hupmobile 20 of 1910 and 1911 and the model 32 which succeeded it. Nelson is producing the cars in a Detroit factory of his own, and the first finished jobs are now coming through and being shipped to dealers. The present capacity of the plant is 10 cars a day.

The Nelson car is essentially a lightweight vehicle built of high grade materials and designed for economical operation. It is stated that it will travel 37 miles on a gallon of fuel and that it will average better than 25 m.p.g.

In the body lines the cowl is eliminated, the hood being in direct contact with the body proper. It is a two-door sedan type with divided front seats, upholstered in gray bedford cord, as is also the top lining. The cushions are tufted with real curled hair over heavy springs. All the windows can be lowered into the body sash and a double windshield is employed. Standard equipment includes a Moto-Meter, Stewart speedometer, Waltham clock and ammeter, gasoline and oil gauges, dash light, tools, tire pump, etc.

In working out the design two ideas were kept uppermost, the five-passenger capacity and the piston displacement of 145.7 cu. in. The car accelerates from 5 to 35 m.p.h. in 13.5 sec. Throughout the materials have been designed for this particular capacity with a particular eye toward economy, which means lightness. The finished vehicle only carries 3 gal. of water and 5 qts. of oil, 2 of which are in a reserve tank.

NELSON SPECIFICATIONS

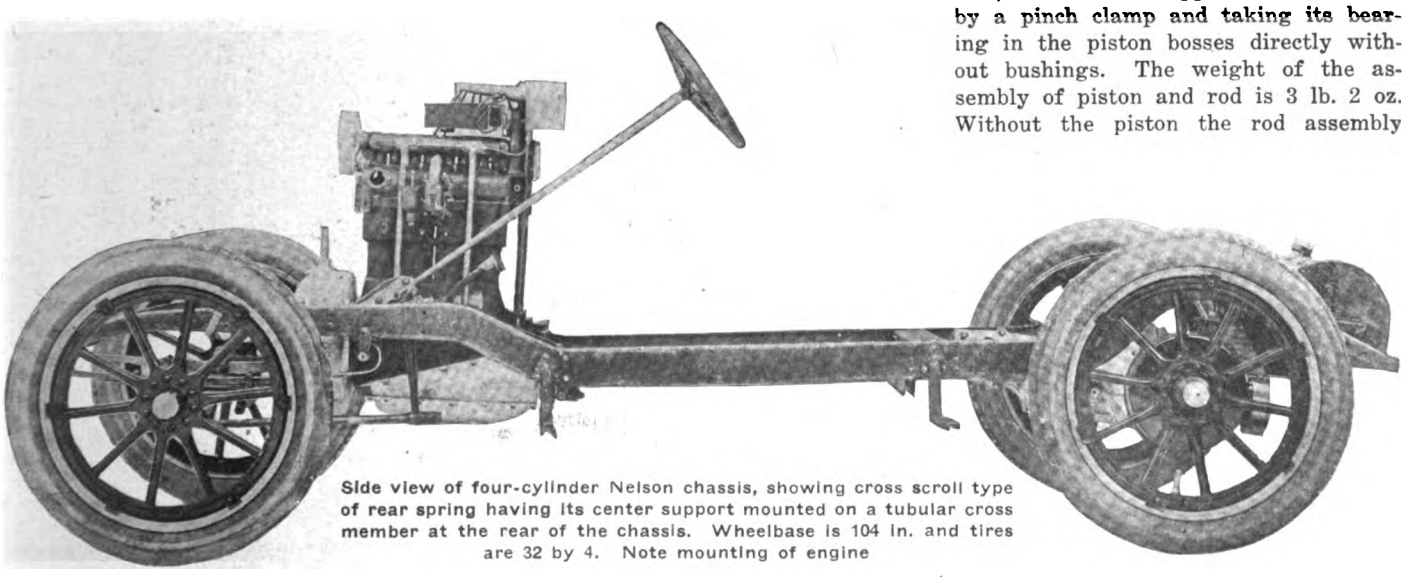
Prices:	
Sedan	$2,200
Make of motor	Nelson
Number of cylinders	Four
Shape	I-head
How cast	Block
Bore	3⅛
Stroke	4¾
S. A. E. horsepower	15.6
Magneto	Bosch
Carbureter	Zenith
Starting	——
Lighting system	U. S. L.
Clutch	Disk in oil
Gearset	Three-speed
Wheelbase	104
Tires	32 x 4
Wheels	Wood
Type rear axle	Floating

Some of the high spots are the overhead camshaft used on the block four engine, the unit transmission incorporating in one housing the clutch, gearset and rear axle gears, the cross scroll spring in the rear and the semi-elliptic scroll in front, and the layout of the valve action.

There is nothing unique about the motor block. This is an iron casting with the upper part of the crankcase integral. Heads are detachable and carry the valve assembly and the manifolds, and above the head there is an additional cap carrying the camshaft assembly, also acting as an oil housing for the latter, which runs in a continual bath.

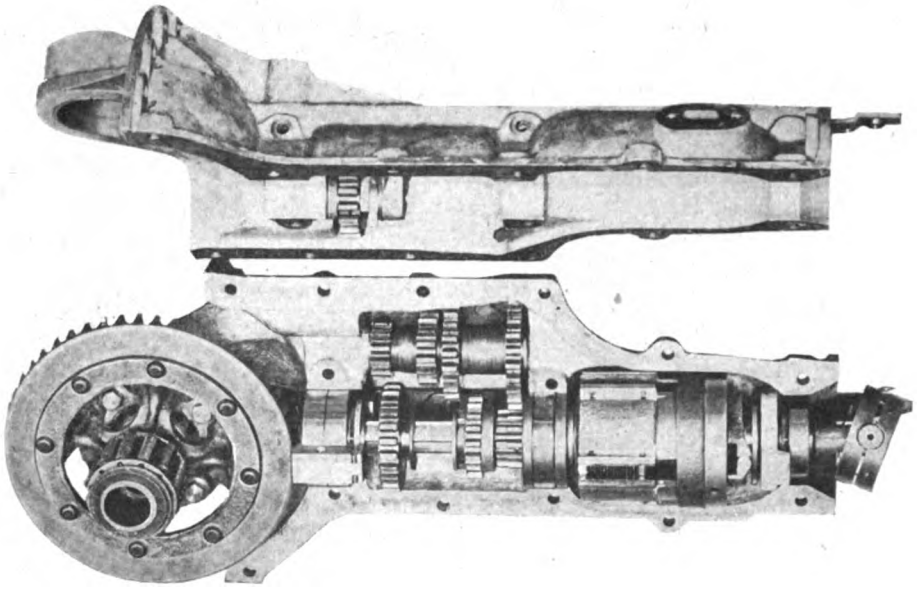
In the piston and rod assembly there is nothing exceptional but the rod section. This is a shallow I designed for stiffness. The piston is iron and carries four rings. These are in two slots, each slot carrying two rings of the ordinary eccentric type, with the rings dowel pinned to the piston to hold the slots at opposite points. The rings are thus locked in pairs.

The piston pin is hollow, 1 in. in diameter, locked in the upper end of the rod by a pinch clamp and taking its bearing in the piston bosses directly without bushings. The weight of the assembly of piston and rod is 3 lb. 2 oz. Without the piston the rod assembly



Side view of four-cylinder Nelson chassis, showing cross scroll type of rear spring having its center support mounted on a tubular cross member at the rear of the chassis. Wheelbase is 104 in. and tires are 32 by 4. Note mounting of engine

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Unit gear box used on the Nelson four incorporating in one housing the clutch, gearset and rear axle gears. This housing is made of aluminum

weighs 1 lb. 12 oz. The bearing at the lower end is 2 in. in diameter and 1½ in. long, provided with two 3½-in. nickel steel cap bolts.

A counter-weighted crankshaft is used, the particular feature of which is the thickness of the cheeks. The thickness of these on the sides adjacent to the two center bearings is 2 7/16 in. The counter-weights are made to balance the throws, plus one-half the rod weights. The material used in the shaft is .40 carbon steel, with the counterweights electrically butt-welded in place.

From the crankshaft the valve drive is carried to the overhead camshaft by bevel gear and vertical shaft. The bevel gear is mounted directly on the rear end of the crankshaft and housed directly in the rear main bearing. The vertical shaft tapers from ⅝ in. at the gear to 9/16 in. at the top, and has a 1 to 1 ratio with the crankshaft. The half-time ratio is secured at the top, where an adjustable spiral bevel transmits the drive. Back of the camshaft spiral bevel gear is a spur gear, which forms the magneto drive, the instrument being mounted on the top of the engine and being a special Bosch arranged so that the magnets lie flatly on the top of the cylinder head.

The camshaft lies directly in the head piece of the engine. At the rear is the spiral gear through which it is driven, and at the forward end is the fan pulley which it drives. It is a short, stiff shaft, carried on five bearings cut directly in the cast iron. The camshaft can be slipped into place from either end and carries the cams integral. These are the true, constant acceleration type, designed to run with .005 clearance and giving conventional timing, with no provision for valve adjustment.

The heads of the hollow tappets and the valve stems which fit into the tappet are ground to finished accuracy, after which no adjustment is required. The intake opens 15 deg. after top center and closes 35 deg. after bottom center. The exhaust opens 45 deg. before bottom center, and closes 10 deg. after top center.

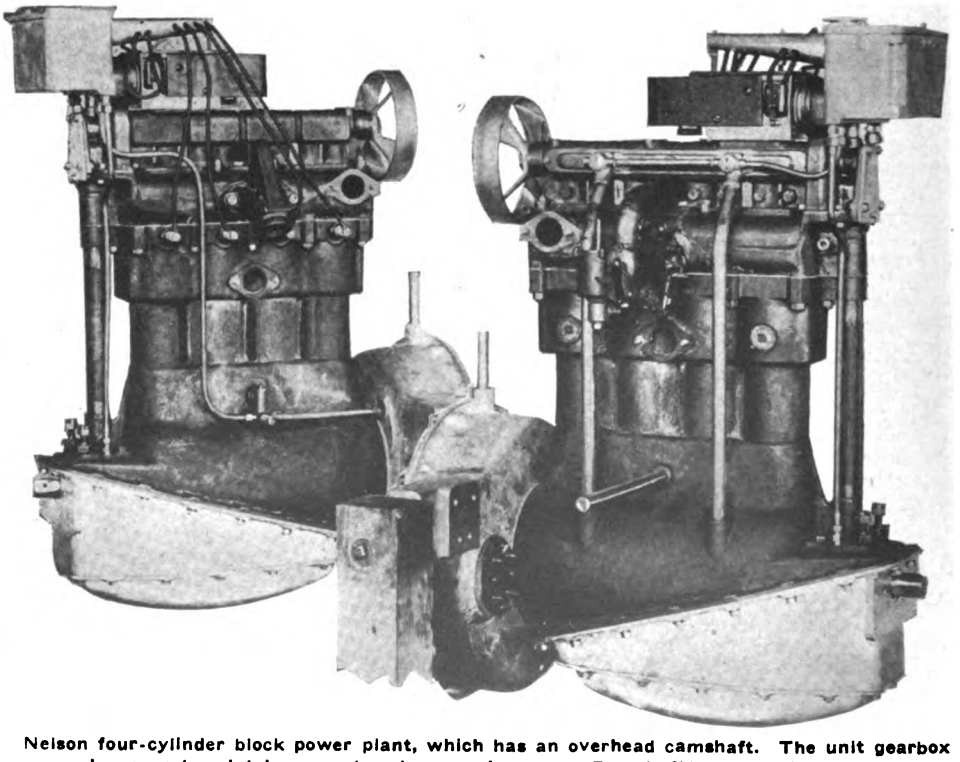
Across the diameter the camshaft measures 1⅝ in. at the bearings. The three center bearings are ¾ in. long and the end bearings ⅞ in. This is a low carbon steel shaft hardened at the rubbing point.

A piston type of tappet fits around the valve stem. The tappets are pressed steel hardened and ground 1⅛ in. diameter, with the follower head ground to a true radius. The valve drive operates with a 28-lb. spring.

Full pressure oiling is used, running up to 30 lbs. per square inch, with an exterior adjustable release. No splash is used to any of the bearings, the oil being circulated through the hollow crankshaft, and with an independent lead directly to the camshaft housing, where it keeps the shaft bearing continually bathed in oil. This circulating system is operated by a pump formed by the drive gears at the lower end of the vertical valve shaft and has a capacity of 3 qts. In addition to this, there is a small tank mounted on the top of the engine having a reserve capacity of 2 qts., which can be allowed to flow into the main reservoir whenever the oil indicator shows no pressure.

A special adaptation of the U. S. L. starting and lighting system is used, in which the unit is mounted, as customary, as a flywheel at front end of motor. The fields are stationary with the armature rotating and forming the flywheel. The hub for the rotating member is a standard taper fitting on the end of the crankshaft while the stationary member is carried on a protection of the crankcase. This is a 12-volt system with inherent regulation.

The Zenith instrument has a vertical flange directly against the cylinder head which contains the integral manifold. The carbureter has an inclined header designed to eliminate the pocket found with a horizontal header at the venturi. A patent has been applied for on this feature.



Nelson four-cylinder block power plant, which has an overhead camshaft. The unit gearbox incorporates clutch, gearset and rear axle gears. Bore is 3⅛ and stroke 4¾ in.

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The economy of the car focuses around the construction of the intake manifold which is so formed that the longest drainer from the carbureter to the furthest intake port is 4 in. The water around the cylinder head is kept at about boiling temperature, Summer and Winter, thus giving the heat required with the present grade of fuel and allowing operation with anything that is called gasoline. Another feature about the throttle linkage is that it is laid out to give a uniform opening at low throttle position.

Cooling is by thermo-syphon with a cellular radiator which has a feature of note in that the drain pipe is carried to the bottom of the radiator, allowing the steam formed in case of a gathering of slushy ice in the bottom to thaw out the cooling system.

The clutch receives its drive from a shaft and single universal, being mounted in unit with the gearset and rear axle. The diameter of the clutch is 3¾ in. and it is comprised of 30 disks of saw steel running in oil. The axle is floating. The housing for the clutch, gearset and transmission part, is aluminum, and the gear reduction at the rear axle is 4.25 to 1.

A cross scroll type of rear spring is used with the center support mounted on a tubular cross member at the rear of the chassis giving a slight compensating or rocking action. The scrolls serve as centering devices and supplant the shackles. On the front springs the scrolls serve to take up the shock between the frame and the spring and also give a flexible drive to the front axle.

There are six cross members in the frame, those at the front and rear being tubular. The steering gear has a divided drop arm which equalizes the bearing stresses on this point. There is also a forked wheel spindle which distributes bearing stresses and takes care of the castor effect. Additional castor is given by mounting the springs ahead of center, the distance being 16 in. front and 18 in. rear. The brake linkage has sectors for expanding the bands. The brakes are both expanding side by side on the same drum. The diameter of the latter is 11½ in. and the face width 1¼ in. The wheel base is 104 in. and the tire size 32 x 4.

Seneca to Be a Four

FOSTORIA, OHIO, Dec. 28—A four-cylinder, five-passenger car selling for $735 will be manufactured by the Seneca Motor Car Co. It will have an L-head Le Roi motor giving 27 hp. at 2200 r.p.m., disk clutch and three-speed gearset in unit. Cooling is by thermo-syphon, the carbureter is a Zenith and the electric equipment consists of a Remy distributor, Willard storage battery and Allis-Chalmers starting and lighting system. Tires 30 x 3½ with demountable rims, and non-skid tires in the rear, are standard, and the wheelbase is 118 in. A three-passenger roadster will also be manufactured.

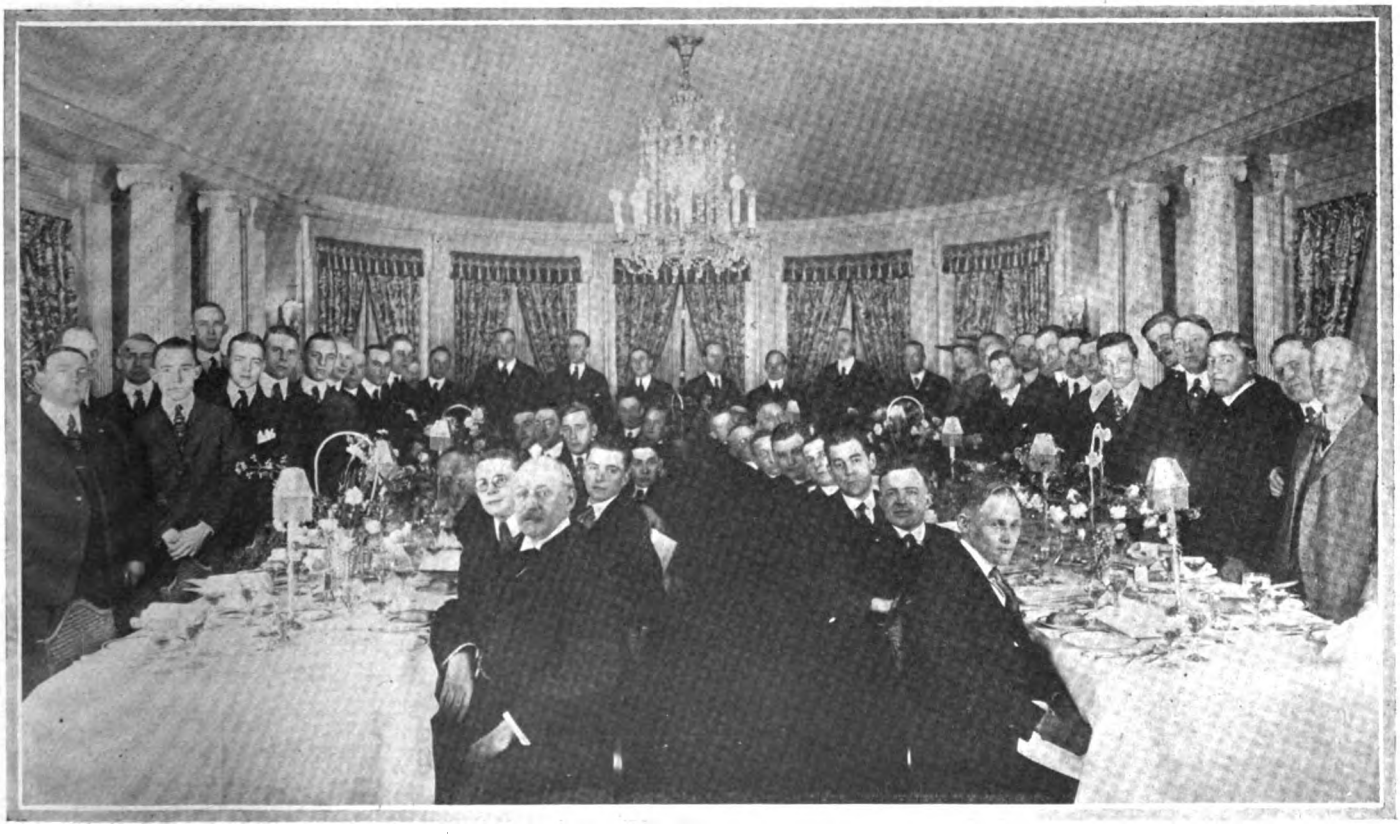
Portland Dealers Erect $100,000 of Buildings

PORTLAND, ME., Jan. 2—More than $100,000 worth of new fireproof buildings are being erected for motor companies in this city. The greater part of them are on Forest Avenue.

Next Week

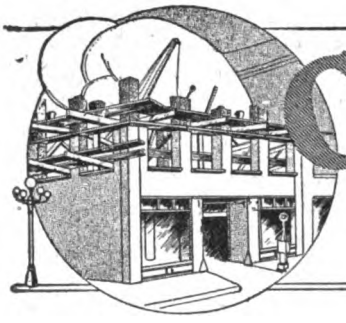
A review of Lien Laws of the whole United States. See how yours compares with others. Also, there will be shown the best draft for a lien law. Try to have it passed in your State.

Fourth Annual Convention Champion Plug Salesmen



All attendance records were broken at the fourth annual convention of the Champion Spark Plug Co.'s salesmen which was held at the Toledo plant recently. Visitors in attendance came from every quarter of the United States. Among other things, plans were discussed for disposing of the Champion output of 20,000,000 plugs for 1917.

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Scientific Construction
GARAGES REPAIRSHOPS SHOWROOMS

By Harold F. Blanchard

COMPLETE ONE-STORY CORNER BUILDING, 66 x 112

Editor Motor World:

We have a corner plot, 66 x 112, on which we desire to place a one-story building with showroom, accessory store, general office, private office, toilets, garage and shop.—Subscriber.

There are two designs, Figs. 1 and 2, which you may use. The latter is probably the preferable one considering all the conditions, but the former is the one to use in case a front entrance to the garage is considered essential.

The objection to the front entrance is that it restricts the frontage so that the display space for showroom and accessory store is rather small, but with the entrance on the side full advantage of the front may be taken and inasmuch as it may be considered as valuable advertising space it is essential to use all of it for display purposes. The question to decide is whether the advantage of having the whole front for display more than offset the disadvantage of having the entrance to the garage on the side street. Even if the garage trade is the most important part of your business, and evidently it is not, the side entrance is not very objectionable provided there is a large sign at the front stating that the garage entrance is on the side street.

Fig. 1 has capacity for only five cars in the repair shop. Entrance to the garage is from both streets, but when the demand for space is strong, the last cars in at night may be placed in the side entrance way.

Fig. 2, which has no front entrance for cars, is not only a more attractive building to look at but also the layout of garage and repair shop is more convenient.

As far as storage capacity is concerned there is little to choose, Fig. 1 having room for twenty-eight cars, including five in the shop, and Fig. 2 having space for one less, including nine in the shop. The shop in Fig. 1 may readily be enlarged, if desired, by lengthening it.

DON'T FORGET!

To draw a rough plan of the block on which your plot is located. To give number of cars to be accommodated in showroom and shop. To state whether accessories are to be carried.

That we would rather draw you a plan to suit your individual case than send you plans from back issues.

That there is no charge for the work done by Motor World.

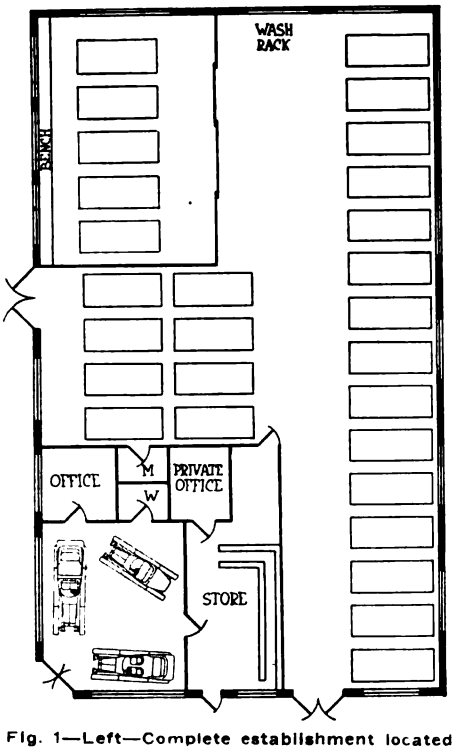
HARRY FERGUSON PLEASED

Editor Motor World:

We wish to put on record without loss of time our very strong appreciation of your most excellent letter of 7th September which has only just reached us. It is simply amazing to us that you should take so much trouble in a matter of this nature, and we wish to thank you very, very warmly indeed. When the writer goes to America, which may be before long, he hopes to have the pleasure of calling on you and thanking you personally.

In the meantime we shall make the greatest use of your suggestions in designing our premises.

Again thanking you very, very much indeed for the great help you have given us and for the immense trouble you have taken in connection with this matter.—Harry Ferguson, Harry Ferguson Ltd., Belfast, Ireland.



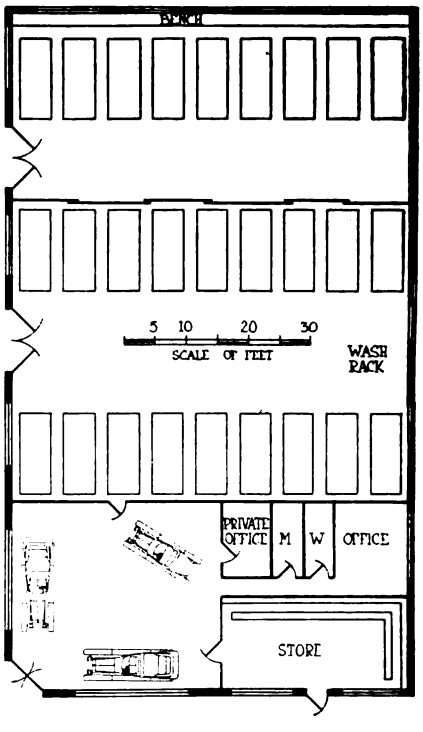
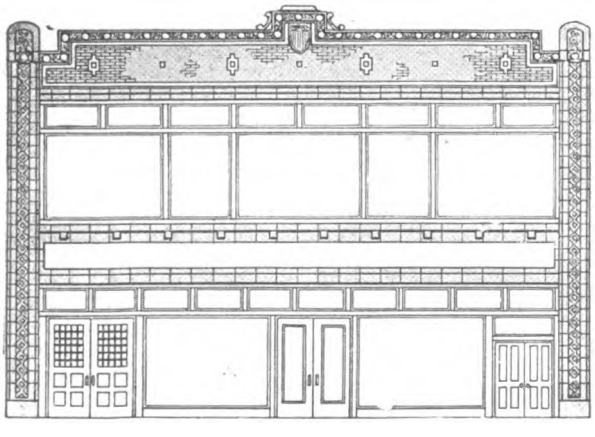
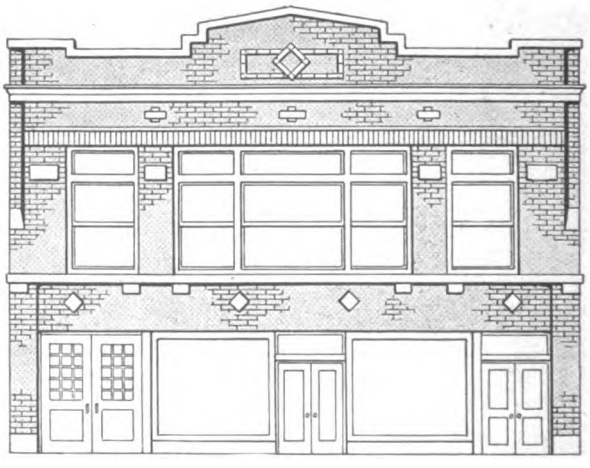


Fig. 1—Left—Complete establishment located on corner and with front entrance. Fig. 2—Right—Same with no front entrance



Two attractive fronts for two-story buildings about 50 ft. wide. The left is trimmed with terra cotta and the right with brick. In both illustrations the garage entrance is at the left, the showroom entrance in the center, and entrance to separate offices upstairs at the right, which are rented



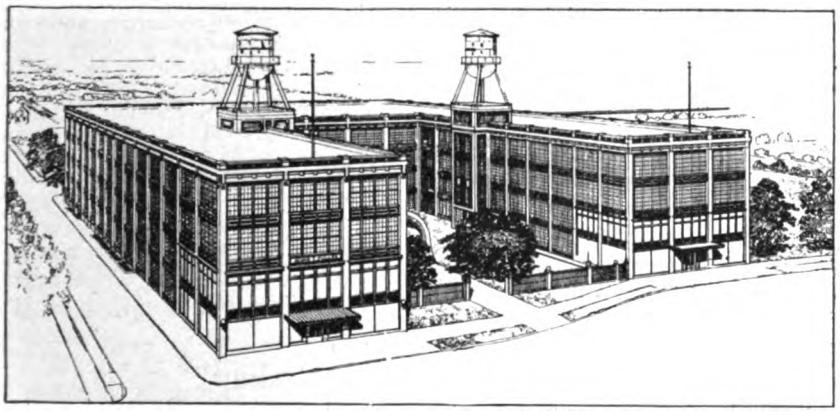
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Four Wonderful Dealer Buildings



The three photographs show some of Denver's most attractive buildings. The top one, Vollmer Bros. garage, is exclusively for Fords. It has capacity for 250 cars, a well-equipped repairshop and showroom for Fords. Part of the lower floor is used for stores and the front.





aye on the upper floor is used for displaying the cars, there being a different model in each window. Price and model name are painted on the window. The owners lay special stress on the speed with which the work is accomplished. Every phase of repairing, painting and body construction is done. The second floor is reached by a 21-degree ramp.

The central photograph shows the home of the Marsheffel Motor Co., the largest dealer in Denver, having the Dodge, Chalmers and Cadillac, as well as capacity for 212 cars in the garage.

The bottom photograph shows an attractive building for gasoline and electric cars. It is the Strang garage and the White and Haynes are handled. The two types of machines are kept separate and have different entrances. There is capacity for twenty-five electrics and 100 gasoline cars.

The line drawing shows the Alvan T. Fuller Building (Packard), Boston dealer, as it will look when completed. The left wing has been in use for several years and the rest is under construction.



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Do It This Way—

···QUERIES ANSWERED···

Starting In Business

Trade Drawn by Attractive Building—Service Important

Editor Motor World: I shall start in business soon and am writing you for some advice. The town has 500 population. It is located on the Rock Island Highway and the travel is heavy from June 1 until fall. I have bought two lots on the corner where the tourists turn west. The highway does not run through the town. There is another garage two blocks off the highway. They are doing a fair business, but tourists do not care to drive out of the way. I have the best location in town. Cars run right by this corner on the highway every 5 min. when roads are good. I intend to put up a small garage to sell gasoline, oil, tires, accessories, etc. My plans are for just a small building 30 x 25 ft. I have agency for Dodge car. Will be paying interest on a loan of $1,000 and $10 per month house rent. I have had four years' experience with driving Ford and Dodge cars. Do you think I could make a success in this location? My aim is going to be to keep overhead expenses down all I can and practise strict economy, be fair, sell standard goods, good service, etc.

I have a Dodge car I have run 9000 miles I intend to put into livery work. There is quite a bit driving done here with Fords. How does livery work pay? Is there any money in it? This car will have a careful driver. It is very economical for the size of car. If the information I can get looks favorable I expect to build in the spring, and shall expect Motor World once a week. I like it very much.—E. C. Aspegren, Courtland, Kan.

In starting your business you apparently have the matter of location well taken care of and are going to have a building that will be suitable for your immediate needs and capital. The rest of it is entirely up to you, and we see no reason why you cannot make a very good success of it.

There are one or two things you must remember. One is that you are asking the car owner to come to you, and that he is not seeking the privilege himself. You must, therefore, do everything you can to secure his business and his good will.

When you put up your place be sure to have an attractive front, and keep it attractive as long as you run the business. Have a display window and use it. Keep it clean and change the display every week. You can keep pretty good check of your progress by noting how often you change this display because the average man who starts in business changes it regularly for 1 or 2 weeks and then begins to slip behind. Generally, he also slips behind all around and finally he slips off entirely.

If you have never had much to do with running a business you will find it difficult to keep up on your toes and do such things as changing your window display every week, but if you are going to be a business man you must do these things. If you have not a determination in your heart to do these things, you had better not start because you probably can make just as much working for wages and probably would enjoy life more.

Keeping down your overhead and practising economy are excellent, and by all means be fair. Sell good goods and give good service. But service does not mean giving away things, it means giving a full return for the money received.

Increasing Starting Power By Raising Voltage Objectionable

Editor Motor World: I have a model 14 Chandler on which I have put new pistons and increased the compression, consequently the starting motor is not strong enough to turn the engine over fast enough for the Bosch magneto to furnish a good spark. The electric system is 6-volt. I have the cells to make an 8-volt battery or more, and by doing this would I increase the speed of the starting motor, and would it be injurious to the starting motor? If so, to what extent?—C. G. Metzger, 15333 Loomis Avenue, Harvey, Ill.

We would strongly advise against increasing the voltage of your storage batteries in order to increase the speed of your motor.

It would be very poor practice for you to change the battery voltage from 6 to 8. This, to be sure, would increase the speed of the starting motor, but would be very dangerous.

The armature of your system is wound for 6 volts, and 8 volts would cause an excessive amount of current to flow through the windings. The current flowing would also be increased due to the increased torque on the motor from the increased compression, and all combined would overload the motor.

We would, therefore, not advise the change of voltage you contemplate. The only practical suggestion we have to offer you is to connect all the compression relief cocks in series and have them operate from a plunger in the dash. Thus, by opening them slightly at the start, the compression would be decreased, and this would permit the motor to be cranked as formerly.

Generator for Charging

Advisable to Buy Equipment Designed for Work

Editor Motor World: I have a model D 24-volt North East motor and generator which I would like to convert into a storage battery recharge and run same with a 1 h.p. gas engine. What can I use for resistance so I can charge 6-volt, 12-volt and 18-volt batteries and on what wire + or — should I connect ammeter? Would this current be strong enough to recharge batteries that were overhauled and had new acid?—Herman Bopp, Brussels, Ill.

We can give you several suggestions as to the proper method of converting your North East motor for charging storage batteries, but would advise that

Neat Letterhead for Repairshop

Completely Equipped Shop

On The Yellowstone Trail

FRANK MARTENS

With The Ochsenreiter Garage

AUTOMOBILE REPAIRING

Work Done Promptly and Satisfactorily

Webster, South Dakota 191

Letterhead designed at the request of Frank Martens, who runs a repair business

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this method is not very practical though it can be done, and may prove satisfactory if the volume of your work is not too great and you have no other source of current available.

The generator should be connected to the engine so that it is driven at about 1400 r.p.m. The ammeter may be placed in series in either line, and should be so connected that it reads positively. The charging rate for the average battery is 6 to 6½ amperes and the limiting relay of the starter should be adjusted each time so that the ammeter reads that amount.

This method of adjusting the limit relay to give the correct amperage is the simplest method of governing the charging rate, and after you have had a little experience should be perfectly satisfactory. Overhauled batteries can be recharged.

DIRECTIONS FOR TESTING DELCO IGNITION

Editor Motor World: I have a car which is equipped with the Delco ignition system. When running at a moderate speed on a magneto it misses all the time but on the dry batteries it is O. K. I have hunted the matter up but cannot seem to locate the trouble. Also, can a car be run on generator without the storage batteries?—A subscriber.

If the motor fires regularly on the "B" button, but misses on the "M" button, trouble is indicated in:

1—The storage battery.

2—The leads running from the storage battery to the motor generator.

3—The lead running from the rear terminal on the generator to the combination clutch.

4—The ground connection running between the battery and the frame.

You should inspect the storage battery and make certain that the solution covers the grids. Then test the specific gravity of the solution with a hydrometer—it should be between 1.270 and 1.290. If lower than 1.270 the battery is discharged.

Then check up the wiring mentioned in 2, 3 and 4. First see that all connections are tight. Then remove each wire, one at a time, and replace it temporarily with a test wire. Note the performance of the engine each time. You will no doubt find a loose connection or a broken wire.

The engine should not be run with the batteries disconnected as a dangerous voltage would be built up. If you have a separate dry cell ignition, you can, however, remove the generator brushes and run the system with the battery disconnected.

How A. E. Shafer Sold Forty-six Maxwells in a Town of 2,400

Circular Letters, Unflagging Effort and Good Service Main Factors

What We Asked

How prospects were obtained; how great a factor service was in making sales; whether anything unusual about the salesmen.

Editor Motor World: When we took the agency there were no Maxwell cars in the county. We started with the purchase and immediate sale of three cars. During the 12 months we maintained a circular letter campaign with an average of one letter every 3 weeks to 100 prospects. Probably 30 per cent of the total sales went to parties who had been circularized.

Personal acquaintance sold quite a few cars, although the writer has been here only 3 years. We carried some advertising in the local papers but not to any great extent.

We found that by placing a car in different directions out of town that other prospects watched these cars to see what kind of service they gave and how much service each car had to have. Probably the same thing was also true here in town. We always keep at least one demonstrating car.

We do some driving in the country and have sold a number in that way, not to mention some trades that we have made in which we are able to handle the used cars. We tried out the monthly payment plan, but it failed here owing to the class of people, i.e., farmers, who do not obtain money in weekly or monthly amounts. This does not mean, however, we have not sold on time payments, as we have done considerable of this, sometimes making a sale of the entire car on time.

We find that when a dealer has a prospect the only way to do is to follow him up until he is sold.

Another thing that helps to sell cars is to give the purchaser GOOD SERVICE, although we do not say much about this beforehand, as our average purchaser does not yet know what service means. We watch all the cars that we sell and keep them in tune, and if they require a small amount of service then it is easy to dispose of more of the same product because of the dealer's enthusiasm and what the prospect can find out through inquiry from owners.



Of course it requires a lot of time and energy to sell cars, even though a number of them are apparently sold very easily.

We have only a space in the garage for a showroom, as we do not find it necessary to maintain a special showroom for our customers in this locality.

To summarize, we can say that this business depended on three factors:

The quality of the manufactured product.

Our particular condition as dealers in this community,

And the amount of money invested in time payments.—A. E. Shafer, Rensselaer, Ind.

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A Department of Better Mechanics

No. 4

Evidence of Trouble:

1—A heavy grinding noise when the clutch is released. *This is usually caused by worn or broken balls in the clutch thrust bearing.*

2—Actual failure of the pedal to release or move the clutch, or to come back into position when pushed out. *This indicates that the clutch spring retaining plug has become unsoldered and has unscrewed from the clutch hub.*

3—Excessive slipping of the clutch, that cannot be cured either by application of Neat's foot oil, if dry, or Fuller's earth, if slippery.

The first necessitates a complete removal of the clutch, together with the flywheel and anchor stud; the second a removal of the clutch hub, and the third the removal of the hub and clutch.

Procedure:

1—Remove floorboards.

2—Remove wiring running from battery to starter.

3—Remove the three bolts holding V-brace to engine base and gearbox support and remove the V-brace.

4—Disconnect brake rods from pedals.

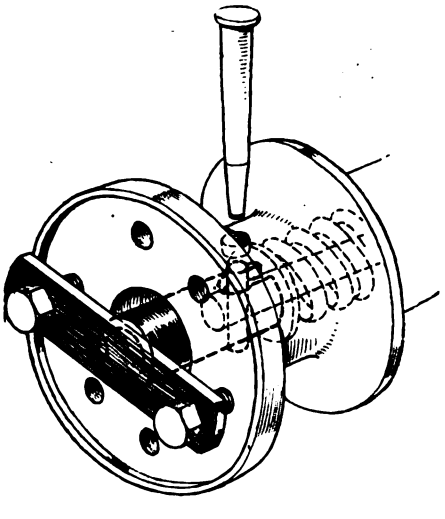


Fig. 1A—Another form of clutch spring compressor, somewhat simpler than that shown in Fig. 1

CLUTCH REPAIRS ON THE CHEVROLET MODEL 490

5—Remove bolts holding clutch release shaft to gearbox support and remove clutch release cross shaft, together with pedals.

6—Remove bolts on rear clutch hub drive ring.

7—Remove the four bolts holding gearbox to gearbox side arms. (*Care should be taken in removing the shims under the gearbox, so they may be replaced in the same position.*)

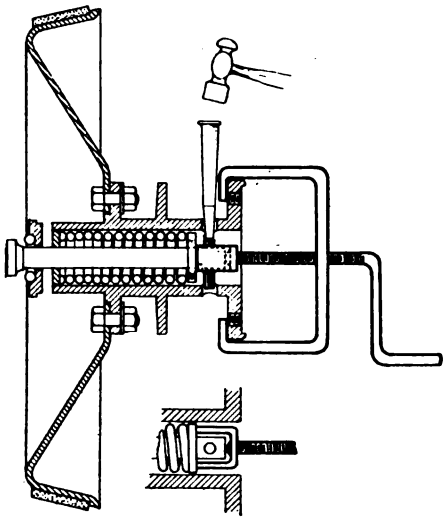


Fig. 1—Showing the method of compressing the clutch spring, permitting the lock pin to be removed

8—Remove one bolt holding the left gearbox side arm (on the pedal side) to engine. (*This permits the gearbox side arm to spring to one side in removing the gearbox.*)

9—Lift gearbox up and slide it forward. It may then be removed from the chassis. (*A jack should be placed beneath the propeller shaft to hold it in place when the gearbox has been removed. In some cars it is necessary to spring the gearbox arms apart or to force the gearbox out with a jack.*)

10—Turn the flywheel until the hole passing through the clutch hub is at the top, and the clutch spring retaining pin is in line with the hole.

11—Using either the compressor shown in Fig. 1 or 1A; compress the clutch spring. The clutch spring retaining pin will usually drop out when over the hole in the housing; but, if not, may be driven out with a punch and hammer.

12—Draw clutch spring out.

13—Remove bolts holding clutch hub to clutch pressing, and remove clutch hub. (*This is necessary, as the hub would otherwise interfere when removing the clutch.*)

14—Pull clutch out. (*This will take some little effort, as the gearbox arms squeeze onto the clutch and must be sprung. BUT IT CAN BE PULLED OUT.*)

15—Remove nuts holding flywheel to crankshaft flange and with a bar loosen flywheel and remove. (*It is advisable to mark the position of flywheel on the flange so it may be replaced in the same relative position.*)

16—Remove flywheel together with clutch spring anchor stud and place in on two boards nailed to the bench.

17—Separate all parts and *clean* with gasoline and waste.

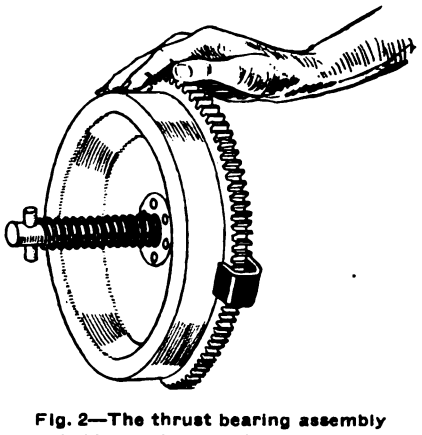


Fig. 2—The thrust bearing assembly is held together by three old valve springs, placed in the manner shown

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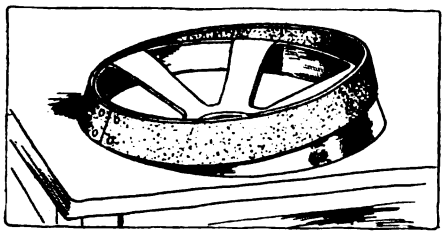


Fig. 3—The new leather should be fastened at the ends, and then forced over the face of the clutch

The Repair

Relining the Clutch

Any work done on the leather of the cone clutch should be based on the action of the clutch during the last time the car was driven, and the appearance of the leather when the clutch is taken down. Clutches of this type give but little trouble if properly used and the necessity for relining is only occasional. If slipping has been experienced and the leather is damp, it is usually because it has been soaked with mineral oil. This may be removed by cleaning the leather with gasoline, after which Neat's foot oil should be applied to keep the leather flexible.

Though a dry clutch will occasionally cause slipping it more usually causes grabbing. Unless the leather is burned, or worn out, it may be restored by roughing the surface slightly with emery paper, and then dressing it with Neat's foot oil.

Another cause of a sticking clutch is protruding rivets, and these should again be set beneath the surface of the leather. A small shoulder will also cause trouble, and this should be scraped or filed down.

A new leather should never be fitted unless it is absolutely certain that the old leather cannot be reclaimed.

If relining the clutch is imperative, it is best to obtain the new lining from the makers. If this is not expedient, the old lining should be carefully removed and used as a pattern for cutting the new lining. The new leather should be much thicker than the old lining and of uniform thickness.

The most essential point in fitting the new leather is to have it fit tight and true to the cone.

To Fit a New Leather

1—Soak the leather in water.

2—Secure one end of the leather to the cone by one copper rivet.

(*Never use anything but copper rivets; other metals will score the metal clutch facing.*)

3—With only about three-quarters of the leather on the cone, pin the other end to the cone by a rivet. (See Fig. 3.)

4—Force the leather up into the cone. It should fit evenly and with uniform tension.

5—Drill and countersink the rivet holes.

6—Rivet the leather in place. Be certain that the rivet heads are 3/32 in. below the leather and well headed on the inner side.

7—Allow the leather to dry *slowly*. It will otherwise shrink too much and pull on the rivets.

8—The clutch should be trued up in a lathe and the surface of the leather turned down to a uniform thickness and filed to a smooth finish. If no lathe is at hand a coarse file may be used to remove the high spots, but this is not good practice.

9—Dress the leather with Neat's foot oil.

Clutch Hub Repair

If the solder holding the clutch spring retaining plug has become loosened, permitting the plug to unscrew—

1—Clean and scrape both plug and hub end thoroughly.

2—Screw plug into hub until the upper surface is slightly below the hub.

3—Heat end with torch, as shown in Fig. 4, and run solder into the joint.

Thrust Bearing Repair

1—Examine the balls and races of this bearing, and if pitted or showing the slightest indication of wear, the entire assembly must be replaced.

2—Place flywheel on bench, as shown in Fig. 2.

3—Force ball race into flywheel casting. This must go in evenly and come to a seat evenly, otherwise the bearing will quickly destroy itself.

4—Assemble the balls and clutch spring anchor stud, packing the balls in grease.

5—Slip the clamp shown in Fig. 2 over the end of the stud. This holds it firmly in place and permits one man to put on the retaining springs.

6—Slip on three old valve springs over the end of the stud and pin in place, as shown in Fig. 2. The clamp may now be removed and the stud, with the thrust bearing, cannot fall apart in reassembling the clutch.

An alternative method, and one commonly used in assembling the anchor stud and bearings, is to place the ball race, balls and anchor stud together before placing them in the flywheel. They may be held together by the three valve springs.

7—Lift flywheel back into place on the engine. Bolt it back in the same position as removed.

DO NOT TIGHTEN ANY ONE BOLT UNTIL ALL ARE DRAWN SNUG. This removes the possibility of having the flywheel out of true, which would ruin the thrust bearings.

8—Remove the pin and three old valve springs from the clutch spring anchor stud.

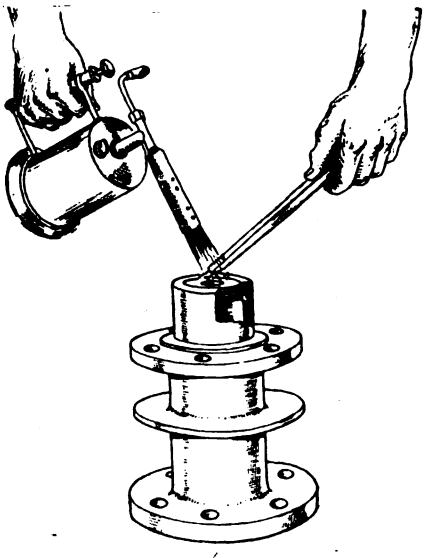


Fig. 4—When loose, the plug in the end of the clutch hub should be sweated back in place

9—Force the clutch back into position.

10—Bolt clutch hub to clutch pressing. Draw all bolts up snug, before any one is tightened.

11—Put clutch spring back in place and pack with grease.

12—Using the compressor shown in Fig. 1 or Fig. 1A, replace the clutch spring retaining pin.

13—Lift gearbox back into frame. *It will have to be sprung past the gearbox side arm.*

14—Replace bolt holding gearbox side arm to engine.

15—Replace the bolts on rear clutch hub drive ring. Bring all up snug together.

16—Replace bolts holding gearbox to side arms. (*Make certain that the shims are replaced exactly in the same position from which they were removed.*)

17—Replace clutch release shaft with clutch yoke and pedals.

18—Connect brake rods.

19—Replace V-brace, connecting gearbox support with engine.

20—Refill oil reservoir on clutch yoke and grease cups on clutch cross shaft. Oil all working parts.

21—Replace wiring.

Start engine, and note whether everything seems to be working properly. If there is a rattle in the clutch drive ring it will indicate that the gearbox is out of line. The shims will have to be shifted or possibly removed. When perfect alignment is reached the rattle will cease.

22—Replace floorboards.

If the clutch has been relined it will not work perfectly until it has been worked in. This usually takes some time and during that period should receive frequent applications of Neat's foot oil.

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What Every Mechanic Should Know

The Proper Method of Using a Tap

THE tap is one of the most commonly used, and most abused of all the repairshop tools; yet its right use is as easy as the wrong, more efficient, and prolongs the life of the tap. A good mechanic is known by the manner in which he uses his tools.

Never use a monkey-wrench or S-wrench on a tap, unless in a tight corner, and then only with extreme care, or the tap will be broken by the one sided strain. On small taps use the T-wrench, made for that purpose; on larger taps the double handled tap wrench.

Try to get the work level and rigid before tapping, and start the tap true. When caught, sight or use a square to see if it is true; and if not, turn the tap backward, and then forward, pressing in the direction required to straighten *on the forward stroke only.*

Start the tapping with a No. 1 tap, or taper tap; followed by the No. 2 or following tap. and if threads are desired a little large, or particularly clean, and to the bottom of a hole, then use the bottoming, or No. 3 tap.

Lard oil should always be used on taps, or dies, never a mineral oil.

Brass or cast iron requires little oil; steel, a continued application, and the tap should not be forced during the cutting. If the tap sticks, backing off, and starting over will usually permit the tapping to be done with little exertion.

Several methods are commonly employed to make a tap cut oversize. One is to pack the groove with cotton waste; another to place a thin strip of copper or brass over one cutting lip, and another to place the tap in boiling water, and cut the thread while the tap is still hot. Of the three, the first is perhaps the simplest, and the second the best method.

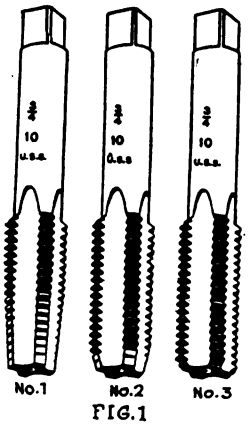


FIG.1

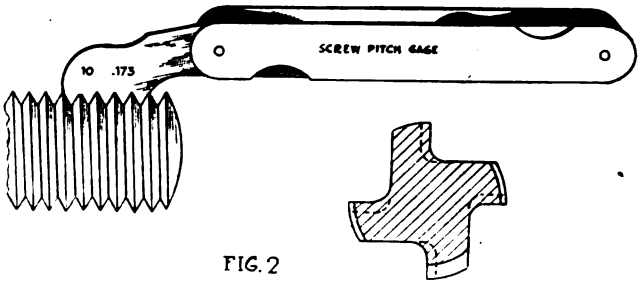
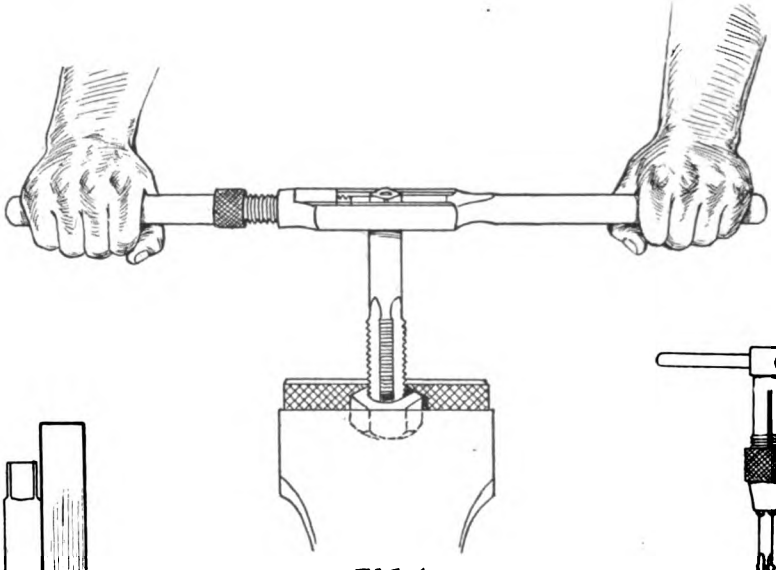
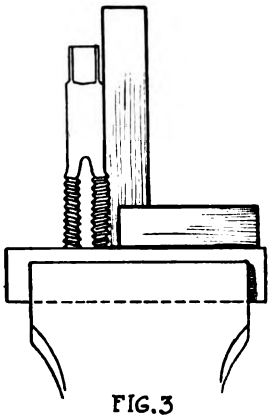


FIG.2


FIG.4


FIG.3

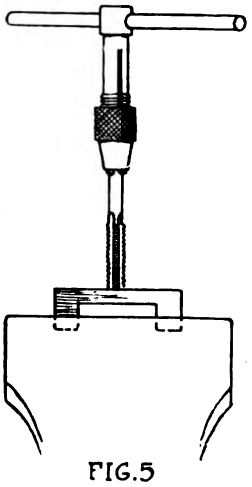

FIG.5

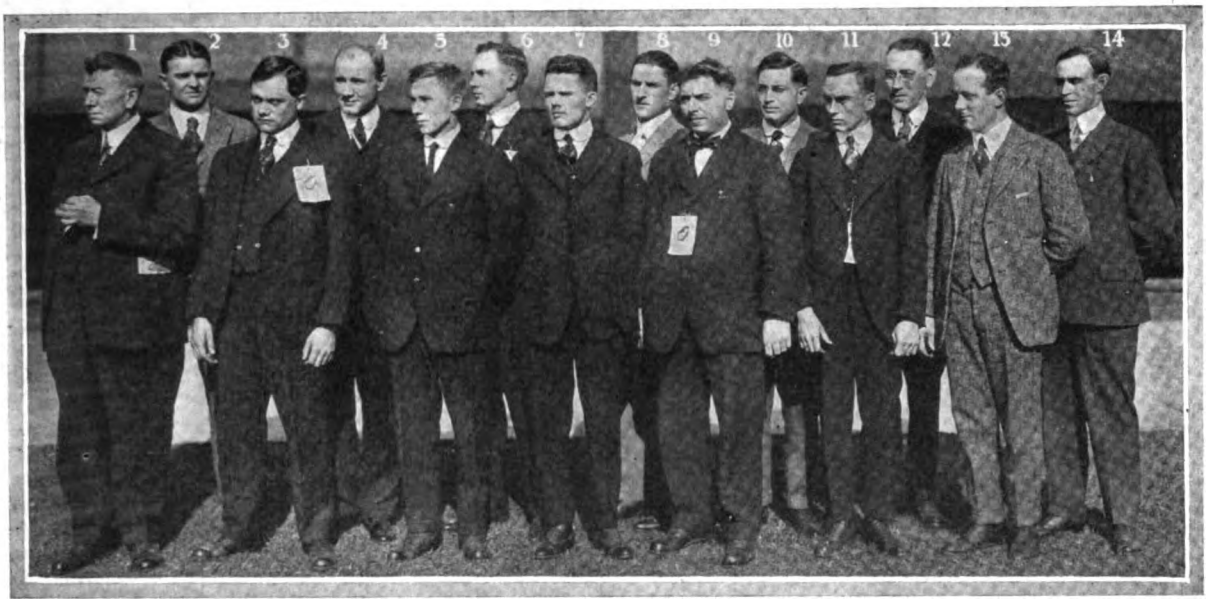
Fig. 1—Showing the three types of taps, No. 1 being the taper tap, No. 2 the following tap, and No. 3 the bottoming tap. Fig. 2—Every mechanic should own a thread gage, as by its use, the proper tap, or die may be selected with greatest facility. The small insert in Fig. 2 shows a section of a tap; the dotted lines showing the portion to be removed when sharpening the tap. Fig. 3—When caught, the truth of the threads may be tested with a square. Fig. 4—The tap should be started square, and with even pressure on each arm of the wrench. Fig. 5—The large wrench should never be used for small taps. Use the small T-wrench illustrated.

Previous Articles

Subject	No.
Overland—Taking up main and connecting-rod bearings	1
Cadillac — Replacing the cam and fan-shaft driving chains	2
Maxwell—Rear axle repairs	3

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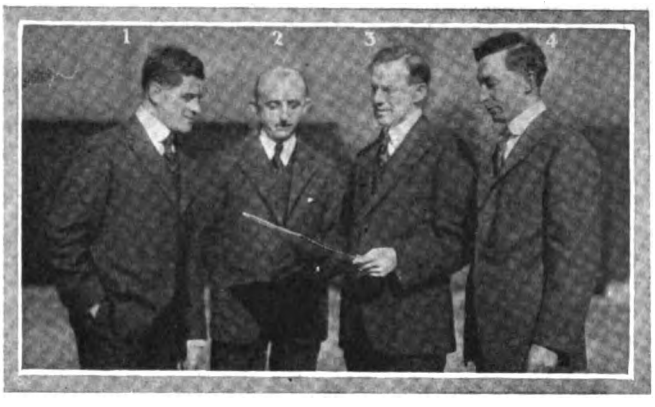
Cole Service Men Talk Shop at the Factory



THE WEST was strongly represented: 1—Herman Steeror, Indianapolis. 2—C. A. Kramer, Sioux City, Ia. 3—C. R. Durbin, Tulsa, Okla. 4—Joseph Ackerland, Minneapolis. 5—George Erickson, Duluth. 6—George Saville, Lincoln, Neb. 7—Homer Evans, St. Joseph, Mo. 8—E. G. Kelly, Kansas City. 9—P. H. Koelsch, Milwaukee. 10—H. W. Parkey, Omaha. 11—E. H. Stockfleth, Evansville, Ind. 12—F. C. Vaughn, Chicago. 13—Donald Miller, Cincinnati. 14—C. J. Smith, St. Louis.



IN CIRCLE — Left, Edward T. Hertz, Cleveland, and right, Edward Linehan, Boston, represented the "thick and thin" of it



THEY HELPED MAKE THE CONVENTION SUCCESSFUL: 1—K. T. Keller, efficiency expert. 2—W. H. Knobloch, factory superintendent. 3—Fred A. Cornell, assistant general sales manager. 4—W. D. Smith, factory service manager



THE EAST also was well represented: 1—William McIlvred, New York. 2 — Edward Stime, Albany, N. Y. 3—W. M. McKinnen, Newark, N. J. 4—A. J. Schwartz, Baltimore. 5—M. Giordon, Providence. 6—H. F. Oliver, Portland, Me. 7—H. S. Gibson, Richmond, Va. 8—Edward Linehan, Boston. 9—Roy Burleigh, Washington. 10 — William Friestag, Philadelphia

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Accounting and Business System

Wants British System

System Editor: Please state if you can furnish the forms to cover the British currency, that is to say, ruled in three columns, for £ s. d.

In adopting your system is it necessary to take stock first and enter the total under stock accounts on Form 2, on the debit side?

The writer would be obliged if you could furnish a system, quick and efficient for the handling of Ford spares.

Nothing of this nature has appeared yet in any issue of the Motor World. The system we are at present using is very cumbersome and entails needless labor.—P. D. KEMP, Harrismith Motor Garage, Harrismith, South Africa.

Your letter has been referred to the manufacturer of our loose leaf system, Tallman, Robbins & Co., and they advise us that it would not pay them to make up the accounting forms designed to take care of English currency, that is, pounds, shillings and pence, unless there were a quantity of orders.

If you desire to establish the accounting system in your business we could probably get an estimate covering one system to be manufactured for you. The only way that the writer can see how the forms could be designed to take care of the English currency would be to eliminate one or two or three of the explanation columns on Forms 1 and 2 and in this space, or in the equivalent of this space on the forms, the space at present used for dollars and cents could be enlarged to take care of the pounds, shillings and pence column.

It is not such a difficult matter to use one or two or three fewer explanation columns, and if you are at all interested we will endeavor to send you a quotation on a system designed as above described, and will endeavor to make it as low in price as we possibly can.

In adopting our system or any system of accounting it is necessary to take inventory of your stock; that is, it is not necessary to take it before beginning the system but some time or other before the end of the current month. Your stock should be inventoried. This is not entered on Form 2 as only purchases of stock are entered on this form.

If you will kindly refer to that section of the system booklet which describes the drawing up of the balance, or the assets and liabilities, you will get a better idea of where this inventory of stock is to be entered and how the accounting for inventory is carried on.

We are sorry to advise that we know of no quick and efficient system for the handling of Ford parts, but we will endeavor to find such a system, and if we do will be glad to advise you.

It's Working Nicely

System Editor: In August, 1916, we got your simplified system of bookkeeping and started it Sept. 1, but I don't have it right. I would like a little information to start it O. K. Jan. 1, 1917. When money is deposited in bank is there any entry on expense account or do you carry Bank Account as Cash on Hand?

We have several notes out amounting to about $1,200. What entry should be put on the books to carry them? And should a check be entered as soon as made or can they be held until the last of the month to enter up?

I think the system is O. K. in every way. There are just a few things that are a ltitle new to get on to. Our goods will inventory about $1,800, two machines of $1,000, shop equipment at about $500. Show us how to enter all this up.—J. H. BARKLEY, manager, HOMER MOTOR CO., Homer City, Pa.

Cash on Hand is supposed to be your cash in the bank and in the drawer, which is generally called Petty Cash. This amount should be exactly the difference between the All Cash Received column on Form 1, which is deposited in your bank, and the All Cash Paid column on Form 2, which are your withdrawals in the form of your checks.

In answer to your last paragraph, we have drawn up a little statement of Assets and Liabilities as of Jan. 1, 1917, showing an inventory of parts $200; your cash in bank, $500; due from customers, $1,000, and deposited with manufacturers, $250. Your other assets amount to $100; your car stock to $2,000, and your equipment $1,500, making a total of your assets amounting to $5,550. You then ascertain your liabilities in a like manner, which we have shown as first; your capital account, $1,000; your notes payable, $1,200; the accrued interest payable on these notes, $18; your accounts payable for sundry purchases and bills that you owe, $3,000, and your other liabilities, $200, making a total of $5,418.

The excess of your assets over these liabilities amounts to $132, which is your Surplus or Undivided Profit. This added to your liabilities will balance your statement and make a total of $5,550 in your liabilities. These figures, your assets and liabilities, should be found before you start the accounting system, and, in this connection, you should read that part of the system pamphlet which illustrates the drawing of an assets and liabilities statement and the additions and subtractions to arrive at the same statement one month hence.

When your money is deposited in the bank it is supposed to be exactly what is represented by the day's totals in your All Cash Received column, and the receipts are spread over the credit side of Form 1, under Income Accounts or under Received From Customers or the All Other Accounts column. Expenses are most generally distributed when you draw your check or take the money from the bank.

It is not necessary to enter any of your Assets and Liabilities on Form 1 or 2 to start the system, but, as explained above, these figures should be determined and entered either in a ledger or on a sheet which we call a Trial Balance Sheet, as illustrated in the System Pamphlet.

We trust this information will enable you to start your accounting system correctly on Jan. 1, and in the event that it is not entirely clear to you, do not hesitate to drop us a line and we will straighten you out on any point.

Assets and Liabilities

ASSETS

Inventory Parts	$200.00
Cash in Banks	500.00
Due from Customers	1,000.00
Deposited with Manufacturers	250.00
Other Assets	100.00
Car stock	2,000.00
Equipment	1,500.00
	$5,500.00

LIABILITIES

Capital Account	$1,000.00
Notes Payable	1,200.00
Acc. Interest Payable	18.00
Accounts Payable	3,000.00
Other Liabilities	200.00
	$5,418,00
Excess of Assets over Liabilities or Surplus	132.00
	$5,500.00

Entering Banked Cash

System Editor: In regard to your Simplified System of Accounting what provision is made for the cash banked.

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and in handling the bank account?—Cain's Garage, Roodhouse, Ill.

On Form I under the debit side is a column headed All Cash Received. In this column you enter every penny of cash that is received into the business, and this cash is all supposed to have been deposited in the bank account, in fact, the total for each day in this column should be the same figure as is entered in your bank book for that day.

On Form 2 is the column headed All Cash Paid, and this represents every penny of cash drawn from your bank account. Now, if you will subtract the total of the All Cash Paid column from the All Cash Received column the figure which would result should be your balance in the bank as of that date.

If, by your letter, you mean where on the forms do we show this balance, the writer wishes to say that there is no special place for this, but in a great number of systems the figures showing the bank balance are being carried in the blank columns just to the left or the right of the All Cash Received column on Form 1 under the debit side. If we have not interpreted your question correctly, please advise us, giving a few more details and explaining what it is you wish.

Faulty System

System Editor: Please find enclosed my check for the continuation of my subscription.

I am looking for a simplified system of bookkeeping for my general business, and want to ask you more about yours. I am enclosing a couple of my customers' monthly sheets, which I use and like very much, but as to the balance of the business I am rather at a loss.

I have a repair department, tires, accessories, storage and general garage, besides selling cars. Could I use my enclosed sheets with your bookkeeping system successfully, without complications, so that I can without much effort find out the day's, week's or month's business?

If your system will give me the above results, I can't get it too quick to suit me, and send same at once so I can get it into operation before Jan. 1.—J. E. WALKER, Helena, Mont.

The only reply that we can give in answer to your last paragraph is to tell you that over 1200 systems are in use among garages and automobile dealers to-day. As far as we know, this is the largest number of a standard system of a kind in use in any trade to-day, and to add that they are giving satisfaction, would, of course, be unnecessary in view of the large number in use.

The accounting system will divide your business into storage, gasoline, oil and grease, repair department, parts and accessory department, car sales, and in your expenses it will divide your departmental expenses from your general overhead.

It will do this and at the same time let you balance your accounts each day. It will tell your total charges each day and each month to your customers. It will tell your collections from your customers, giving you a daily idea of the amount of money outstanding which has to be collected. It will tell your daily cash balance and the expense of each department.

In answer to your paragraph in reference to the attached sheet, the writer is going to be perfectly frank with you and tell you that it is possible to use these sheets with the accounting system, but if you do, it will be directly contrary to the advice of the Business Systems Department, as has been stated in the columns of Motor World more than once.

The best example of the inefficiency of these sheets is for you to sell during the month 10 gallons of gasoline each day which you would enter under the date sold under the heading Gasoline on the white sheet. You then add up all of these items and carry the total forward to the total gallons column and multiply this by the cost per gallon sold.

Suppose, for example, you make an error in adding up this bill of 10 gallons. There is no way in your accounting system, if you use these forms, whereby that error could be detected, and if you were selling gasoline at 30 cents per gallon you would be out $3. The same thing applies to the sale of oil, and an accounting system that will not detect such errors as this should not deserve the name of system or accounting system.

A sheet of this kind necessitates the use of a lead pencil in making out your monthly charge, which is never very much appreciated by your best customers. If the bill is to be rendered and the customer is a reputable one there is no reason you should not render him a bill in a business-like manner.

If you will kindly drop us a line telling us why you wish to use these forms, and if you have any argument that will offset what we have stated above, we shall be pleased to publish the same in the columns of Motor World. If we can be of any further service to you in any way, please feel sure that we are at all times ready to serve you.

P. S.—S. P. McMinn, associate editor of Motor World, who has just overheard the above letter dictated, has produced a bill similar to the one that you have sent us, on which a charge of five gallons of gasoline was entirely left off his bill. The writer personally knows that this mistake is being made by hundreds of garages every day, and the worst part of it is they are never in a position to detect the error and the leaks go on and on.

Entering a Trade

Editor Motor World: We have your accounting system in use, but have a little trouble in figuring how to list the following. Had a Maxwell used car in stock, cost price $85. Sold it and got $105 cash and a Mercury truck, value about $60. Cash received would be debited for $105. Car sales would be credited for $105; but didn't know how to show that we put the Mercury in stock and for what value, as it didn't cost us anything.—GEORGE A. ARNOLD, Arnold's Garage, Aurora, Ill.

The Maxwell car which you carried in stock at $85 is sold for $105 cash and a truck valued at $60, so that you actually received $165 for the Maxwell car. Your entry would be: charge cash $105, charge car stock account $60, credit car sales $165.

This entry will show the profit on the transaction and also put your Mercury truck in your car stock account as having been purchased for $60. Should you decide that $60 is too high value to put on the Mercury truck, you, of course, can enter the value at something less than $60.

How About You?

THE other day the proprietor of the Tremont Garage in upper New York dropped in at the MOTOR WORLD office and said he wanted a system. He said he wanted to take it away with him and get it started in his business the first of the year.

He said: *"I want to get started right the first of the year. We have a system up there, but it isn't as good as it might be."*

Hundreds have taken this same ACTION. They have seen the unwisdom of NOT KNOWING WHERE THEY ARE GOING and have put in a new system which STEERS THEM RIGHT.

They have made more money thereby.

As the new year begins every dealer and garageman should make sure his system is right, and if he is in doubt he should make it right.

How about YOU?

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Packard Opens Exhibit in Wall Street Section

Establishes Branch Salesroom in Downtown New York to Reach the Moneyed Men

NEW YORK, Dec. 28—The New York branch of the Packard has opened a salesroom in the City Investing building, at 165 Broadway, a short distance from the end of Wall Street, and near the Equitable, Singer, Woolworth, Trinity and other famous structures of lower Manhattan.

In this salesroom, about 19x24, is shown one car. A different special custom job is shown each week, and the downtown exhibit operates in its sales work in conjunction with the sales office at the main establishment on Motor Row.

The showroom is on the arcade of the City Investing building. At one end of the arcade is Broadway, at the other end the Cortlandt Street L station, and thousands pass through the arcade each day. Manager B. C. Helm and two salesmen have been busy all day to-day, and Helm estimates that not less than 500 people have been in the salesroom.

In connection with the opening of the exhibit the branch ran an 8½x14-in. ad in the "Wall Street Journal," which is circulated exclusively among financial and business men. Also a special announcement was sent to the prospect list.

While the exhibit is an experiment, Manager Helm states that there seems every indication it will be successful and therefore permanent.

Garford Distributes from Kansas City

KANSAS CITY, MO., Dec. 29—The Garford Motor Truck Co., Lima, Ohio, has made final arrangements to open a general headquarters for the distribution of its trucks in Kansas City. Quarters have been leased in a two-story building at 1708-1710 Main Street, which are now being remodeled for occupancy Jan. 1. This plant will be the only distributing station outside the factory at Lima, and will supply all of the mid West and Pacific Coast territory. It is expected that at least 10,000 cars will be handled through this branch next year, and the number will probably be nearer 25,000. The officers of the company are: R. T. Conger, president; F. H. Thwing, vice-president, and J. E. Ball, secretary and treasurer.

Pontiac Tractor Co. Formed

DETROIT, Dec. 21—The Pontiac Tractor Co. has been incorporated for $42,000 in this State and will take over the Wright Mfg. Co. plant at Pontiac for the manufacture of a tractor to sell at $750. The officials of the new concern will include M. D. Hubbard, of the Hubbard Spring Co.; Fred S. Welsh, who was at one time connected with the Welsh Motor Car Co., which is no longer in existence, and N. A. Wright, of the Wright Mfg. Co. The tractor is constructed with a steel frame, and a single-cylinder oil-burning engine of 30 to 35 hp. The complete tractor weighs 4200 lb. The company plans to produce from three to five tractors per day.

Hal Increases Prices

CLEVELAND, Dec. 30—All models of the Hal twelve motor car will be increased in price, effective Jan. 1, 1917. The touring and roadster models will increase from $2,385 to $2,600; the Springfield touring sedan from $3,250 to $3,500, and the Westchester limousine and brougham models from $4,250 to $4,500.

Lien Laws

NEXT week in MOTOR WORLD will appear a summary of all the lien laws in the United States. These are of vital interest to every garageman and dealer. There will also be shown the best law possible.

Columbus Getting Ready

COLUMBUS, Jan. 2—The Columbus show will be held in Memorial Hall Jan. 27 to Feb. 3, under the auspices of the Columbus Auto Show Co. The committee in charge is composed of Harry J. Schwartz, Frank E. Avery, A. W. Gill and W. H. Payne.

Maxwell Chooses Officers

NEW YORK, Dec. 29—J. R. Morron has been elected a director and member of the executive committee of the Maxwell Motor Co., Detroit, to fill the vacancy caused by the resignation of Eugene Meyer, Jr. J. C. Brady was elected chairman of the board and of the executive committee, in place of J. C. Jay, Jr. Jay will continue as a director of the company and has been elected a vice-president. Morron is president and a director of the Atlas Portland Cement Co., and is also a director in the following companies: Baltimore & Ohio Railroad, Chicago, Great Western Railroad, Guarantee Trust Co., the American Surety Co., and the National Bank of the Republic of Chicago.

Action in Springfield

SPRINGFIELD, OHIO, Dec. 19—The second annual show of the newly reorganized Springfield Automobile Trade Association will be held in the new Memorial Hall, Feb. 19-24. Fifteen dealers will show sixty cars. The enthusiasm over the show is taken to indicate permanency for the association. C. S. Burke, of the C. S. Burke Motor Co., is secretary.

"Warnola" Horn Named by Motor World Contest

Many Combinations Submitted for Signal of Two Tones—New York Ad Man Wins

NEW YORK, Dec. 30—Warnola has been chosen as the name of a new automobile warning signal which is to be placed on the market by the Warnola Manufacturing Co., New York.

The name Warnola was chosen following an advertisement which was run in Motor World, The Automobile and Motor Age once only in October.

A prize of $25 was offerd for the best name, and it was won by Arthur Hirshon, an advertising man with the Ewing & Miles Advertising Agency, New York.

Despite the fact that the advertisement appeared but once and that more results in a case of this kind are generally received from a second or third appearance of the advertisement, the ads brought a total of 4300 names. These were of great variety and the work of the contest committee was rendered difficult because of the excellence of the names submitted.

There was a large division beginning with the word "auto" and the word "bugle" appeared in various forms nearly 200 times. There were many combinations of the word "clarion" and the word "clear," and because the horn contains two reeds, giving a combination of two distinctive notes, the word "dual" or "duo" was also combined in a great variety of ways. Because the horn has a melodious rather than a sharp tone the word "mellow" was another favorite of the contestants. "Safe" and "safety" were also worked hard by the contestants as were "triumph" and "trumpet."

The selection of many of these names would have necessitated the addition of the word horn, as, for instance, "Bitone horn," but with the use of the word "warnola" it has been decided to call the device "The Warnola," the same as the word "Victrola" is used to describe a talking machine. The new signal will be advertised as "The Warnola" and not as "The Warnola Horn."

The results of the contest were particularly gratifying to the promoters of the horn, who now state that this is without doubt the easiest and most efficient way of selecting a name.

The judges were: Harvey Adams, Auto Supply Co.; James A. Abeles, Motor Car Equipment Co., and Ray W. Sherman, Motor World, all of New York.

Salesrooms for the new company will be located temporarily with the Motor Car Equipment Co., 19 West Sixty-second Street, New York.

M. A. M. Sanctions Aero Show

NEW YORK, Jan. 2—The Motor and Accessory Manufacturers has sanctioned the Pan-American Aeronautics Exposition, to be held in Grand Central Palace Feb. 8-15. This means that M. A. M. members may exhibit.

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Salon Will Set Styles in Motor Car Bodies

Semi-dull Finish, Smooth Upholstery and Neatness the Features—The Novara, a Speed Creation, Appears

NEW YORK, Jan. 2.—Body styles likely will be set by some of the new creations on view at the thirteenth annual motor car salon, which opened at the Hotel Astor to-day, and will close Jan. 10. One significant feature is the closeness with which many of the custom jobs resemble factory jobs that now are being turned out.

The extended use of a semi-dull finish, the disappearance of tufted upholstery in many cases, and the careful attention which is being given detail are the features of the exhibit which is essentially a show of new body styles. In addition, however, there are a number of cars which are revealed for the first time at a public exhibition. These are the Biddle, Daniels, Murray, Phianna and Novara. There are fifteen makes of cars displayed, and American products are far more numerous than in previous years. Eleven of these makes are American.

The Novara is a small, special, speed creation, which will be built only to order, and is to be marketed by G. M. Thurber, of the Isotta-Fraschini Motors Company, and Sidney De Wolf Herreshof. It will be built in the plant of the Herreshoff Mfg. Company, Bristol, R. I. But one style will be made, this being a distinctive roadster model, with a mahogany body built in the same manner as the hull of a yacht. The car is equipped with a 3 x 4¼ block high-speed overhead-valve four-cylinder motor, having drilled Lynite pistons and drilled connecting rods; the speed capabilities are over 50 m.p.h. on second speed, and over 70 m.p.h. on high. The weight is 1500 lb., the wheelbase 110 in., the tires 31 x 4, and the price $2,750. A one-piece windshield, devoid of binding, and rolled fenders hugging the wheels tightly and minus the usual skirt to the body, give a distinctive touch.

A semi-dull finish is preferred by many of the exhibitors; it is stated that those who purchase these high-class, high-price cars have taken a pronounced liking to the unobtrusiveness of this finish. Tufting has disappeared from the upholstery in a great many cases, this being particularly noticeable in the outside seats of the inclosed cars. For the most part, somber colors are chosen for the inside upholstery, and there are a number of jobs done in tapestry.

One of the features of these custom bodies is the great attention which is given detail. Neatness appears to be the paramount thought in the minds of the designers. The binding on windshields is getting smaller; body molding is getting smaller and in some cases is disappearing; it is these little things which have such a big effect in giving the custom body its air of exclusiveness. Darker colors are coming more into use.

Among the extreme body styles there is a Lancia hydroplane, a sporty type of roadster devoid of top or windshield and finished entirely in dark maroon. The cowl is the highest part of the body, the lines sloping back to a rear deck.

Both Locomobile and White have comprehensive exhibits, including nearly every type of body. In the Locomobiles, an innovation is equipment with Dictaphones. One body is sporting cabriolet in which the closed portion of the body entirely disappears; the usual side lamps are set into the windshield, leaving the exterior of the body entirely unobstructed. Another is a special boat type in which the top body line breaks sharply at the cowl and is continued straight back to a commodious rear deck; seats are adjustable. A feature of the Locomobiles is the use of accelerator pedals the full length of the foot and shaped like the sole of a shoe. One Locomobile has the top body line beveled instead of fitted with the usual molding.

The pointed front closed car is a popular style, both White and Locomobile showing these. In them the body lines are perpendicular at the sides. White has two pointed front coupes, both finished semi-dull; these, with the other Whites, are equipped with the new sixteen-valve four-cylinder motor. Another White model is a boat type cloverleaf roadster, with a slanting, pointed windshield, and a beveled top body line. One noticeable feature of all these custom bodies is the trim manner in which fenders hug the wheels.

Daniels has an unusual type of white touring car fitted with a black Victoria top, and equipped with a windshield at the back of the front seats, which slides up or down.

Following is a complete list of exhibitors:

Car	Exhibitor
Biddle	Biddle Motor Car Co., Philadelphia.
Brewster	Brewster & Co., L. I. City
Daniels	A. E. Ranney Co. New York
Fiat	Fiat Motor Sales Co., New York
Isotta-Fraschini	I-S Motors Co., New York
Lancia	T. E. Adams, Inc., New York
Simplex-Crane	Simplex Automobile Co., New Brunswick, N. J.
Singer	Singer Motor Co., Long Island City, N. Y.
White	White Motor Co., Cleveland
Locomobile	Locomobile Co. of America, Bridgeport.
Murray	Murray Motor Car Co., Pittsburgh
Novara	G. M. Thurber and Sidney De Wolf Herreshoff, New York
Phianna	John G. Dale, New York
Roamer	Roamer Motor Co. of New York, New York
Rolls-Royce	R. W. Shuette, New York

Some Boston Dealers Plan Winter Playtime

Business in the Hub so Good That Exodus Begins to Sports and Warmer Lands

BOSTON, Jan. 2—Some idea of the prosperity of the Boston automobile dealers is shown by the plans a number of them are making for the next few weeks, even though it is a busy time leading up to the Boston show.

First, about all of them will visit the New York show, and then instead of going home they will hie elsewhere to spend their surplus cash, since Massachusetts has passed an income tax law.

A. B. Henley, who, with George T. Kimball, handles the Hudson in the Hub and elsewhere, will go to New Orleans, then to the Pacific Coast, and from there across to Honolulu, with Mrs. Henley, for a sea trip to dodge submarines. He will be gone 2 months. Kimball is going to Palm Beach for several weeks, too.

President John H. MacAlman of the Boston Automobile Dealers' Association is to go to Bellair, Fla., with Mrs. MacAlman, to remain there until it is time to come back to open the big motor show in March. John H. Johnson of the Buick is to go South, and then to French Lick for a month.

Joseph S. Donovan of the Studebaker will visit the golf centers at Aiken and Ormond, possibly Thomasville, Ga., also. C. S. Henshaw, Dodge Brothers dealer, will take his first vacation in some years and go to Florida. J. W. Bowman of the Velie and Daniels does not believe in the warm spots, so he is going to Canada to enjoy winter sports.

Ralph Nettleton of the Chandler will make a trip South, and on his return George Crittenden, his partner, will slip away for a few weeks. Between these trips and some of the big houses they are building on Commonwealth Avenue, the prosperity of the Boston dealers the past year is much in evidence.

Detroiter Has New Coupe and Sedan

DETROIT, Dec. 28—The Detroiter Motor Car Co. has new convertible coupe and convertible sedan models. The convertible sedan will sell for $1,398, the coupe for $1,373.

Denver May Hold Show

DENVER, Jan. 2—A committee to investigate the advisability of holding a motor car show has been appointed by the Automobile Trades Association of Colorado. The tradesmen held a successful fall show a year ago in connection with the National Farm Congress here, but they have never tackled an exclusive show of their own.

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Des Moines Trade Plans $4000 Cooperative Ads

Will Teach the Public the Truth about the Motor Industry—Experts in Charge

DES MOINES, IOWA, Dec. 29—The Motor Industry Bureau of the Des Moines Chamber of Commerce has completed its organization and a co-operative advertising campaign is one of its important activities for 1917.

A total of seventy-five automobile and accessory dealers and garage owners is represented in the membership of the bureau, and a fund of $4,000 will be used for the advertising campaign. Most of the space used will be in the daily press of the city, and the advertising copy already has been prepared by O. R. MacDonald, advertising manager for the Herring Motor Co.

This copy is of an educational nature, and is designed to give the general public the right idea of the motor trades industry as represented by local interests. One angle to be emphasized will be that the car dealer and garage owner are entitled to a fair profit. The birth of this co-operative advertising campaign was the direct result of an experience which several dealers had with a prominent business man in another line, who persistently refused to pay the list price for a new car.

The Motor Trades Bureau is the second largest group of the local Chamber of Commerce and has 114 members. A good-roads clearing house will be another innovation for 1917. A legislative committee will represent the interests of the organization at the session of the State legislature which will open here in January. The bureau is divided into departments, as follows: Car, oil, garage, and accessory. G. W. Jones is at the head of the bureau and represents its members on the directory board of the chamber. As head of the bureau his assistants include O. R. MacDonald, C. Fred Claiborne and C. O. Hart. One of the leaders in the organization of the new bureau was C. C. Nye, newly elected secretary of the Iowa Automobile Retail Dealers' Association.

Walden Changes Its Name

WORCESTER, MASS., Jan. 2—The Walden Mfg. Co. has changed its name to Walden-Worcester, Inc., to coincide with the name it has made famous for its wrenches. It is a change in name only.

Plan Car Tax to Meet Deficit

DETROIT, Dec. 29—Reports from Washington state that Congress will again consider an automobile tax as a method of increasing the government revenue. The plans to be suggested will include a tax of $12 for motor cars wholesaling for less than $500, $18 for cars wholesaling at less than $1,000 but more than $500, $20 for cars wholesaling between $1,000 and $2,500, and $25 for all cars bringing more than $2,500.

Reo Increases Price

LANSING, MICH., Dec. 30—The Reo Motor Car Co. has increased the Reo six-cylinder touring car and roadster models from $1,150 to $1,250. Other models are being continued at former prices, but the company states that it will be unable to guarantee these prices throughout 1917.

Detroit Club Has Show Train

DETROIT, Dec. 28—The new Detroit Automobile Club has arranged for a special train to carry all who desire to visit the New York show. The train will leave Detroit Sunday, Jan. 7.

Overland Advances Prices

TOLEDO, Dec. 29—Effective Christmas day, the Willys-Overland Co. inaugurated a new schedule of prices on the Overland and Willys-Knight. The Overland Country Club model has risen in price to $750 from $695 and the Willys-Knight coupe has advanced from $1,500 to $1,650, 1200-lb. The Overland delivery wagon has gone up to $850 from $775, and several of the other models have seen like advances, as follows:

Model	New Price	Old Price
90-Touring	$665	....
90-Roadster	650	....
Country Club	750	695
—Panel delivery	700	625
—Express delivery	675	595
85B-4 Touring	850	795
85B-Roadster	835	775
85B-4 Touring Coupe	1,250	1,045
85B-4 Touring Sedan	1,450	1,195
85-6 Touring	985	925
85-6 Roadster	970	....
86-6 Touring Coupe	1,385	1,175
85-6 Touring Sedan	1,585	1,325
88-6 Touring	1,325	....
84 Coupe	1,650	1,500
1200 lb. Delivery	850	775

CARL PAGE BECOMES DISTRIBUTER OF THE JORDAN

NEW YORK, Jan. 2—Carl H. Page, for years a figure in metropolitan motor affairs, has again become a New York retailer and distributer by taking the Jordan agency. During recent months he has been a wholesaler only, handling the Mitchell in outlying territory. He formerly retailed the Mitchell also, but this business was some time ago taken over by a factory-promoted organization, leaving Page the wholesale.

The business will be conducted by the Carl H. Page Motors Co. in quarters which have yet to be selected. The Mitchell wholesale account will be retained. The Jordan has been handled this fall by John G. Dale, who also had and still has the Phianna agency.

Tire Prices Start the Rise That Was Expected

Goodrich and Goodyear Make Advances and Others Are Working on New Schedules

NEW YORK, Dec. 31—Goodyear and Goodrich have taken the initiative in regard to raising tire prices for 1917, the increases ranging from 10 to 20 per cent. It is expected that the others will follow. At the present time Fisk, United States, Ajax and others are working on price readjustments.

Goodyear has advanced 15 per cent on pneumatic tire casings and 10 per cent on pneumatic tubes and truck tires. Goodrich prices have advanced from a fraction to 10 per cent. The following gives the lists of Goodyear and Goodrich on several principal sizes:

Goodrich

Size	Old	New
28 x 3	$9.35	$11.10
34 x 4	21.34	23.45
36 x 4	22.55	24.90

Goodyear

Size	Old	New
28 x 3	$9.55	$11.00
34 x 4	22.40	25.75
36 x 4½	31.55	36.30

The increase is attributed to the cost of crude materials and labor. A comparison of a few of the materials' price increases follows:

	Nov. 1 1915	July 1 1916	Nov. 1 1916	P. C. Increase for Year
Sea Island cotton	.67	.76½	1.20	79
American cotton	.39	.46½	.61½	57
Egyptian cotton	.66	.66	1.00	51
Rubber Ceylon grades	.61½	.58	.63	3

Gibson Men in Conference

INDIANAPOLIS, Dec. 30—The Gibson Co., Indiana Overland distributer and accessory dealer, closed this week its annual conference of members of its accessory department and manufactures of accessory goods handled by the company. The 4-day session was brought to a close by an address by Joseph M. Block, manager of the Gibson Co. and a member of the ways and means committee of the National Association of Automobile Accessory Jobbers. He outlined the various new points in sales organization and of the sales campaign that will be effective during 1917.

Teetor-Hartley Pays Bonus

INDIANAPOLIS, Dec. 30—The Teetor-Hartley Motor Co. of Hagerstown, Ind., last week announced a plan whereby bonuses will be distributed to the company's 300 employees in the near future. The amount of the employees' dividend will be $5,700.

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Prominent Tradesmen Assume New Duties

Resignations and Promotions Place Workers in New Places

R. E. Chamberlain, formerly truck sales manager of the Packard Motor Car Co. of New York, has been appointed truck sales manager of the Packard Motor Car Co., Detroit.

J. Frank Shugers, superintendent of the Auburn Automobile Co., Auburn, Ind., tendered his resignation Dec. 15. Shugers has been connected with the Auburn company since its inception. He has announced no plans for the future.

T. W. Simpson has been appointed director of sales for T. S. Johnston & Co., Monroe distributer, New York.

Edwin A. Travis has been appointed general sales manager of the Locomobile Co. of America, Bridgeport, Conn. He was formerly assistant sales manager and, previous to that, manager of the Locomobile branch at Boston.

Delmar G. Roos has been appointed assistant chief engineer of the Locomobile Co. of America. Roos was associated with the engineering department for several years.

Percy W. Hine has been appointed manager of the Bridgeport branch of the Locomobile Co. of America. He was formerly associated with the sales department and executive offices.

Clinton B. Amorous enters the general sales department of the Locomobile Co. of America. He was formerly assistant purchasing agent.

Orlando Weber, vice president of the Maxwell Motor Car Co., Inc., has resigned.

R. S. Hurd, Portland, Ore., for a number of years branch manager for the White Co., has been promoted to Pacific Coast sales manager with headquarters in San Francisco. C. W. Cornell has been named Portland manager for the White Co., to succeed R. S. Hurd.

L. E. Nutt has resigned from the Velie Motors Corp. He has been connected with this company for 15 years and has been for the past 4 years in direct charge of purchasing and materials for the Velie interests. He was also a director in the Velie company and secretary of the Motor Vehicle and Engineering companies. His plans for the future have not been announced as yet.

Louis Schwitzer, formerly engineer for the Empire Auto Co., Indianapolis, has been added to the staff of The Oaks Co.

Nemorin Causan, of Paris, France, who has been in Detroit for the past 6 months, has joined the engineering staff of the Chalmers Motor Co. Causan was formerly associated with the Dalage, Bayard-Clement and Panhard companies.

F. W. Anderson, formerly assistant chief engineer of the Remy Electrical Co. and previous a designing engineer with the Dayton Laboratories, has become associated with the Engineering Department of The Eisemann Magneto Co.

L. A. Keller, formerly Omaha branch manager for the Studebaker Corp., has been transferred to manage branch at Portland, Ore.

J. R. Gemmrll, formerly sales manager for the Kansas City branch of the B. F. Goodrich Co., has been made manager of the Chicago branch of the Pennsylvania Rubber Co.

Henry Kennedy of the foreign department of the Studebaker Corp., has been made branch manager at Omaha.

A. H. Brown, formerly Portland branch manager for the Studebaker Corp., has become a Studebaker dealer in Albany, N. Y.

A. W. Crossman, who was formerly the retail manager of the Studebaker Corp., Detroit, has become the manager of the Los Angeles branch.

R. D. Maxwell, formerly Los Angeles Branch manager for the Studebaker Corp., has joined the organization of the Ables Co., Studebaker dealer in Honolulu.

Henry Barton has been made president of the Northway Motor & Mfg. Co. Barton has been an executive of the General Motors Co. for several years.

W. H. Varley, who was manager of the Hudson branch in Newark, N. J., has joined his former chief, E. C. Morse, now vice-president and general manager of the Chalmers Motor Co., and will travel for Chalmers.

Thomas E. Swayne has been appointed to the management of the Los Angeles branch of the Locomobile Co. of America. He was formerly with the Oakland branch.

S. Christensen has been appointed as special sales representative of the Motor Products Corp. Christensen was formerly traveling representative of the Vanguard Mfg. Co., one of the five companies now incorporated in the Motor Products Corp.

Would Tax Trucks Fourteen Times Present Fee

ALBANY, N. Y., Dec. 29—Truck fees in New York State will be increased from double to fourteen times the present charges, if the report of the special truck fee commission filed with the Secretary of State to-day is favorably acted upon by the legislature. All commercial vehicles now operated in the State pay a flat yearly fee of $5. If the proposed schedule is made into law all commercial vehicles having a combined weight of truck and carrying capacity load of 2 tons or less will have to pay $10, or double the present fee. The charges increase in $5 increments for increases in weight up to $70 for trucks of combined weight of chassis, body and load not to exceed 14 tons. Trucks whose total weight is in excess of 14 tons will have to pay $70 plus $10 for each additional ton of weight above that amount.



This is the Benford Golden Giant spark plug made by the Benford Mfg. Co., Mount Vernon, N. Y. Another plug was inadvertently captioned as a Benford last week. The Benford plug is heavily gold plated and insulated with blue adamant and special copper asbestos gaskets; it has pure nickel electrodes.

Newspaper Advertising Barred During the Show

Des Moines Dealers Make Pot of $100 Each and Will Advertise the Show Only for the Week

DES MOINES, Jan. 2—The dealers in this city have adopted a radical plan for advertising during the show, which will be held Feb. 19-24.

They have chipped in $100 each and made up a pot of $3,000, which will be used before and during the show to advertise the show and the cars to be shown. Each show add will carry the names of the exhibitors and their cars. Last year the dealers spent about $20,000 on show advertising.

Much of this was spent because of the activities of the newspaper solicitors, and it is charged by the dealers that they were oversolicited and that they did not get their money's worth out of the amount spent. In some cases newspapers took charge of blanket ads under the name of Des Moines dealers and extracted the pay for the ad from numerous country dealers who were asked to take part of the space.

After the show, of course, advertising will be renewed on the usual basis, every man for himself. Meantime the association is asking manufacturers not to advertise in Des Moines until after the show, and is doing everything it can to make the plan successful.

Freights Cause Gas Shortage

DETROIT, Dec. 28—Many large gasoline distributers are suffering a famine due to the freight congestion. Prices of gasoline have advanced from 2 to 3 cents and several distributing stations have been forced to shut down entirely.

Regal Price Increases

DETROIT, Dec. 28—The Regal Motor Car Co. has increased the price of its car from $695 to $745.

Oldsmobile Price Increase

DETROIT, Dec. 28—The Oldsmobile Co. has increased the price of its car by $100, to take effect Jan. 1.

Government Sues Klaxon

NEWARK, N. J., Dec. 30—Suit was brought to-day against the Lovell-McConnell Mfg. Co., this city, by the Department of Justice in the Federal District Court to secure injunctions under the Clayton anti-trust act to prevent enforcement by the defendant of contract stipulations that jobbers handling its automobile horns shall handle no others and shall sell horns at prices the Lovell-McConnell company fixes.

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Specifications of the Leading Cars

MOTOR WORLD GUIDE

Revisions Are Made in Table Every Week

Model	Motor	S. A. E.	Ignition	Carburetor	Starter	Clutch	Gearset	Wheelbase	Tires	Rims	2-Passenger	5-Passenger	7-Passenger	Coupe	Sedan	Limousine	Detachable Top
ABBOTT																	
6-44	6-3½x4½	25.3	Remy	Stmbg	Remy	DP	3	122	32x4	SS	1195	†1250	1195	1495	1820	....	....
ALLEN																	
Classic	4-3½x5	22.5	Wsths	Stmbg	Wsths	C	3	112	32x3½	SS	850	850	†850	1175	....	....	1195
AMERICAN-SIX																	
A	6-3 x5	21.6	G & D	Zenith	G & D	D	3	122	32x4	SS	....	1235	....	....	....	....	....
AMS-STERLING																	
17	4-3½x4½	15.6	Bosch	Stmbg	Bosch	DP	3	110	30x3½	SS	....	....	....	....	....	....	....
ANDERSON																	
Six-40	6-3½x4½	25.4	Wsths	Own	Wsths	DP	3	120	33x4	SS	1275	1250	*1250	....	....	....	....
APPERSON																	
6-17	6-3½x5	29.4	Remy	Rafld	Bijur	DP	3	130	34x4	SS	1750	....	1750	....	....	....	....
8-17	8-3½x5	31.2	Remy	Rafld	Bijur	DP	3	130	35x4½	SS	2000	....	2000	....	....	....	....
ARBENZ																	
	4-3½x5	16.9	Conn	Carter	Disco	C	3	108	30x3½	C	....	675	....	....	....	....	....
AUBURN																	
6-39	6-3½x5	23.4	Remy	Rafld	Remy	DP	3	120	34x4	SS	1145	1145	†1145	....	....	....	1320
6-44	6-3½x5½	29.4	Deleo	Rafld	Deleo	DP	3	131	35x4½	SS	....	†1535	1535	....	....	....	1765
AUSTIN																	
Hy-King	12-2½x	39.7	Deleo	Stmbg	Deleo	D	6	142½	34x4½	SS	3750	3750	3750	4550	4950	5250	....
BIDDLE																	
D	4-3½x5½	22.5	Dixie	Zenith	G & D	DP	4	122	32x4	QD	2200	2350	†2375	....	....	3800	3900
BOUR-DAVIS																	
17	6-3½x4½	25.3	G & D	Stmbg	G & D	DP	3	118	32x4	QD	....	1250	....	....	....	....	....
BREWSTER																	
	4-4x5½	25.6	Bosch	Zenith	U.S L.	C	3	125	34x4½	SS	†6500	....	....	....	7500	7700	....
BRISCOE																	
B4-24	4-3½x5½	16.3	Conn	Mayer	Splitdorf	C	3	105	30x3½	QD	685	685	†685	....	....	....	....
8-38	8-3 x3½	28.8	Remy	Zenith	Apleo	C	3	114	32x3½	QD	‡985	985	....	....	....	....	....
4-38	4-3½x5½	18.9	Remy	Mayer	Apleo	C	3	114	32x3½	QD	‡785	785	....	....	....	....	....
BRUNSWICK																	
	4-4½x5½	36.1	Bosch	Rafld	Wsths	...	3	...	....	..	....	....	1950	....	....	....	....
BUICK																	
D4 34																	
D 4-35	4-3½x4½	18.2	Deleo	Marvel	Deleo	C	3	106	31x4	C	660	675	....	....	....	....	....
6-44-45-46-47	6-3½x4½	25.3	Deleo	Marvel	Deleo	C	3	115	34x4	SS	1040	1070	‡1440	....	1835	....	....
CADILLAC																	
55	8-3½x5½	31.2	Deleo	Own	Deleo	D	3	{132 125}	36x4½	SS	†2240	2240	2240	2960	....	3760	2835
CASE																	
T-17	4-3½x6	21.0	Conn	Rafld	A-Lite	C	3	120	34x4	QD	†1190	....	1190	....	....	....	....
CHALMERS																	
6-30	6-3½x4½	25.4	Remy	Stmbg	Wsths	DP	3	{115 122}	32x4	SS	1070	1090	1350	1440	1850	2550	....
CHANDLER																	
17	6-3½x5	27.3	Bosch	Rafld	G & D	D	3	123	34x4	SS	†1395	....	1395	1995	1995	2695	1995
CHEVROLET																	
4-90	4-3½x4	21.7	Conn	Zenith	A-Lite	C	3	102	30x3½	C	490	490	....	....	....	....	....
F5-F2	4-3½x4	21.7	Conn	Zenith	A-Lite	C	3	112	32x3½	SS	800	800	....	....	....	....	....
D	8-3½x4	36.45	Conn	....	A-Lite	C	3	120	34x4	SS	1100	....	....	....	....	....	....
COLE																	
8-60	8-3½x4½	39.2	Deleo	Stmbg	Deleo	C	3	127	35x4½	SS	†1695	....	1695	....	2295	2295	2195
CROW-ELKHART																	
CE-35	4-3½x5	19.6	Conn	Zenith	Dyneto	DP	3	114	32x3½	SS	†825	795	....	....	....	....	935
DANIELS																	
8	8-3½x5	33.8	Wsths	Zenith	Wsths	D	3	127	34x4½	QDR	†2800	....	2800	....	....	4000	....
DAVIS																	
H & I	6-3½x4½	25.3	Deleo	Stmbg	Deleo	C	3	119	34x4	....	1195	1195	1195	1595	1795	....	1995
J	6-3½x5½	29.4	Deleo	Stmbg	Deleo	C	3	124	34x4½	....	....	1495	1495	....	....	....	....
DETROITER																	
6-45	6-3½x4½	25.3	Conn	Ball	A-Lite	D	3	119	33x4	SS	‡1195	1195	....	....	....	....	1398
F	4-3½x4½	22.5	Dixie	Schebler	Dyneto	D	3	112	33x4	SS	....	965	....	....	....	....	....
DISPATCH																	
G	4-3½x5	23.5	Bosch	Rafld	U.S.L.	D	4	120	36x3½	....	1135	1210	....	1400	....	....	....
DIXIE FLYER																	
1917	4-3½x5	16.9	Conn	Carter	Dyneto	C	3	112	32x3½	SS	†795	795	....	....	....	....	....
DODGE BROTHERS																	

Mode	Motor	S. A. E.	Ignition	Carburetor	Starter	Clutch	Gearset	Wheelbase	Tires	Rims	2-Passenger	5-Passenger	7-Passenger	Coupe	Sedan	Limousine	Detachable Top
LIBERTY																	
6	6-3½x4½	23.4	Deleo	Rafld	Dcle	DP	3	115	32x4		†1095	1095	....	....	1295	....	....
LOCOMOBILE																	
R-7	6-4½x5	43.3	Eismn	Ball	Wsths	DD	4	139	37x5,	QDC	†4750	*4600	4600	....	....	5600	....
M-7	6-4½x5½	48.6	Eismn	Own	Wsths	DD	4	142	37x5	QDC	*5400	....	5400	....	....	6500	....
LOZIER																	
84	4-4½x6½	28.9	Bosch	Stewart	G & D	D	4	120	36x4½	SS	....	....	1695	....	....	....	....
82	6-3½x6	36.0	Eismn	Rafld	G & D	D	3	132	36x4½	SS	....	....	2775	....	....	....	....
LUVERNE																	
17	6-3½x5	33.7	Bosch	Schebler	Bosch	DD		132	35x4½	SS	....	....	1500	....	....	....	....
MADISON																	
4	6-3½x5	23.4	Remy	Rafld	Remy	DD	3	120	34x4	SS	....	....	....	....	....	....	....
	6-3½x5	23.4	Remy	Rafld	Remy	DD	3	115	34x4	SS	1050-1150		....	....	....	....	....
	6-3½x5	23.4	Remy	Rafld	Remy	DD	3	124	34x4	SS	†1150	{1150 1250}	1150-1250	....	....	....	....
MAIBOHM																	
A	4-3½x4	15.6	A.Kent	Zenith	Disco	DD	3	105	30x3½	SS	695	....	....	....	....	....	....
MAJESTIC																	
M	8-3x5	28.8	A-Kent	....	R & M	DP	3	125	32x4	....	†1500	1650	1650	....	....	....	....
A	8-3½x5	33.8	A-Kent	....	R & M	DP	3	135	35x5	....	†3000	3000	3000	....	....	....	....
MARION HANDLEY																	
6-40	6-3½x5	23.4	Wsths	Stmbg	Wsths	DD	3	120	32x4	SS	†1275	....	1275	....	....	....	....
6-60	6-3½x5½	29.4	Wsths	Stmbg	Wsths	DD	3	125	35x4½	SS	....	....	1475	....	....	....	....
MARMON																	
34	6-3½x5½	33.7	Bosch	Stmbg	Bosch	C	3	136	34x4½	QD	††3100	3050	3100	....	4100	4500	....
MAXWELL																	
25	4-3½x4½	21.	Sims	K-D	A.Kent	C	3	103	30x3½	C	620	635	....	865	985	....	....
McFARLAN																	
	6-4½x6	48.6	Bosch	Stmbg	Wsths	DP	3	136	35x5	QDR	3750	3800	3500	....	....	....	....
MERCER																	
22-73	4-3½x6½	22.5	Bosch	Corser	U.S.L.	DD	4	132	34x4½	QDC	†3500	*3500	....	....	....	....	....
22-73	4-3½x6½	22.5	Bosch	Corser	U.S.L.	DD	4	115	32x4	QDC	3400	Racebout, 3250	..	....	....	....	....
METZ																	
25	4-3½x4	24	Dixie	A.W.T.	G & D	F	..	108	32x3½	C	545	545	....	....	....	....	....
MITCHELL																	
D-40	6-3½x5	25.4	Conn	Rafld	Splitdorf	C	3	120	32x4	SS	1050	1050	....	....	....	....	....
C-42	6-3½x5	29.4	Conn	Rafld	Wsths	C	3	127	34x4	SS	‡1325	1325	1360	1850	1985	2650	....
MOLINE-KNIGHT																	
C	4-3½x5	22.5	Conn	Schebler	A-Lite	C	3	118	34x4	SS	†1450	1450	....	....	....	....	....
G	4-4 x6	25.6	Conn	Schebler	A-Lite	C	3	122	35x4½	SS	†1750	....	1840	2400	2350	....	....
MONARCH																	
	8-3 x5	28.8	A.Kent	Zenith	....	D	3	125	35x4½	....	....	1500	....	....	....	....	....
MONITOR																	
C-R	4-4½x4½	22.5	Heinse	Schebler	Heinse	D	3	108	32x3½	SS	795	795	....	....	....	....	....
N-O	6-3½x4½	25.4	Heinse	Stmbg	Heinse	D	3	115	33x4	SS	995	995	....	....	....	....	....
MONROE																	
M-3	4-3 x4½	14.4	Conn	Zenith	A Lite	DD	3	96	30x3	DC	565	....	....	....	965	....	....
M-4	4-3½x4½	16.9	Conn	Zenith	A-Lite	DD	3	115	32x4	DC	....	985	....	....	....	....	....
MOON																	
6-43	6-3½x4½	25.3	Deleo	Rafld	Deleo	DD	3	118	32x4	SS	‡1295	1295	....	....	....	....	1450
6-66	6-3½x5½	29.4	Deleo	Rafld	Deleo	DD	3	125	35x4½	SS	†1650	....	1650	1690	2250	....	....
MURRAY																	
70-T	8 3½x5	33.8	Dixie	Zenith	Wsths	DP	3	128	34x4½	..	2500	....	2500	....	....	Chassis	2000
NATIONAL																	
Hgy	6-3½x5½	29.4	Dixie	Rafld	Wsths	C	3	128	34x4½	QDR	†1750	....	1750	2400	2350	....	....
Hgy	12-2½x4½	39.68	Deleo	Rafld	Bijur	C	3	128	34x4½	QDR	†2150	....	2150	2800	2750	....	....
OAKLAND																	
34	6-2½x4½	18.9	Deleo	Marvel	Deleo	C	3	112	32x4	SS	‡875	875	....	....	....	....	{995 1020}
50	8-3½x4½	39.2	Deleo	Stmbg	Deleo	C	3	127	34x4½	SS	....	....	1585	....	....	....	....
OLDSMOBILE																	
45	8-2½x4½	26.4	Deleo	Johnson	Deleo	C	3	120	33x4	SS	1295	1295	....	....	1850	....	1775
OVERLAND																	
85-4	4-4½x4½	27.2	Conn	Titan	A-Lite	C	3	112	32x4	SS	....	795	....	1045	1195	....	....
85-6	6-3½x4½	25.3	Conn	Titan	A-Lite	C	3	116	32x4	SS	....	925	....	1175	1325	....	....
75-B	4-3½x5	18.2	....	....	A-Lite	C	3	104	31x4	C	620	635	....	....	....	....	....
OWEN																	
M-25	6-3½x5½	29.4	Bosch	Zenith	O-M	OM	..	125	34x4½	SS	....	3150	....	3500	....	4400	....
O-36	6-3½x5½	33.7	Bosch	Zenith	O-M	OM	..	136	35x5	SS	‡3750	†3750	3750	....	....	4800	....
PACKARD																	
2-35																	
2-25	12-3 x5	48.2	Bijur	Own	Bijur	DD	3	{135 136}	35x5	QDC	3050	3050	3050	4150	....	4450	....

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DORT																			
9	4-3½x5	16.9	Conn	Carter	Wsths	C	3	106	30x3½	QDC	†695	695	....	....	1065	....	815
DREXEL																			
R-30-35	4-3½x5	19.6	Bosch	Stmbg	Bijur	C	3	112	33x4	....	855	855	....	....	....	....	....
	4-3½x5	19.6	Bosch	Stmbg	Bijur	D	3	118	34x4	....	†1485	....	1845	....	....	....	....
ELCAR																			
D.F.	4-3½x5	19.6	Deleo	Carter	Dyneto	DP	3	115	32x3½	SS	845	845	†845	....	....	....	....
ELGIN																			
	6-3 x4½	21.6	Remy	Stmbg	Wagner	DP	3	116	33x4	....	†985	985	....	....	....	....	....
EMERSON																			
Four	4-3½x4	22.5	A.Kent	Kngstn	....	D	3	110	30x3½	C	....	895	....	....	....	....	....
EMPIRE																			
45	4-3½x5	24.0	A-Lite	Stmbg	A-Lite	C	3	116	33x4	SS	....	960	....	....	....	....	....
60-R	6-3½x4½	25.6	Conn	Stmbg	A-Lite	C	3	120	34x4	SS	†1145	....	....	....	1635	....	....
70	6-3½x4½	25.6	Conn	Stmbg	A-Lite	DP	3	120	34x4	SS	....	1235	....	....	....	....	....
ENGER																			
13	12-2½x3½	34.2	Wsths	Stmbg	Wsths	DP	3	116	32x4	SS	....	1395	....	....	....	....	....
FIAT																			
55	4-3½x6	42.	Wsths	Zenith	Wsths	D	4	140	35x5	QDC	....	....	5500	....	....	6500	....
56	6-4½x6	46.6	Bosch	Own	Own	D	4	135	37x5	QDC	‡5350	5350	5350	....	....	....	....
FORD																			
T	4-3½x4	22.5	Own	{Holly Kngstn	....	D	2	100	30x3½r	C	345	360	....	505	645	....	....
FOSTORIA																			
	4-3 x4½	14.4	Remy	Zenith	....	D	3	106	30x3½	C	....	695	....	....	....	....	....
FRANKLIN																			
9	6-3½x4	25.3	A.Kent	Own	Dyneto	D	3	115	32x4	SS	1800	1850	†1850	2650	2750	3000	....
F.R.P.																			
45-A	4-4½x6½	33.8	Bosch	Lagmre	Bosch	C	4	110	36x5r	C	7000	....	....	....	....	....	....
45-B	4-4½x6½	33.8	Bosch	Lagmre	Bosch	C	4	140	36x5r	SS	Chassis	7000	....	....	....	....	....
GLIDE																			
6-40	6-3½x5	23.4	Wsths	Rafid	Wsths	D	3	119	34x4	SS	....	1145	....	....	1335	....	....
GRANT																			
K	6-3 x4½	21.6	Remy	Stmbg	Wagner	C	3	112	32x3½	....	‡825	825	....	1050	1000	....	....
HACKETT																			
Four	4-3½x4½	22.5	G & D	....	G & D	D	3	112	31x4	SS	‡888	888	....	....	....	....	....
H. A. L.																			
	12-2½x5	39.6	....	Stmbg	Wsths	DP	3	135	34x4½	SS	2600	†2600	2385	....	....	4500	3500
HALLADAY																			
S	6-3 x5	21.6	A-Lite	Stmbg	Wsths	D	3	118	33x4	SS	‡1185	1150	....	....	....	....	....
R	6-3½x5	22.0	Wsths	Stmbg	Wsths	D	3	122	34x4	SS	1335	1335	....	....	....	....	....
HARVARD																			
4-2T	4-3 x4½	14.4	....	Zenith	Wagner	C	3	100	28x3	QD	750	....	....	....	....	....	....
HAYNES																			
36	6-3½x5	29.4	Remy	Rafid	L-N	DP	3	121	34x4	SS	....	1485	....	....	2150	....	....
37	6-3½x5	29.4	Remy	Rafid	L-N	DP	3	127	35x4½	SS	†1585	....	1585	....	2250	....	....
40	12-2½x5	36.3	Deleo	Rafid	L-N	DP	3	121	34x4½	SS	....	1985	....	....	2650	....	....
41	12-2½x5	36.3	Deleo	Rafid	L-N	DP	3	127	34x4½	SS	†2065	....	2065	....	2750	....	....
HOLLIER																			
186	6-3 x4½	21.6	Remy	Stewart	A-C	C	3	116	32x3½	SS	....	895	....	....	....	....	....
178	8-3 x4½	28.8	A-Kent	Stewart	Apico	C	3	116	34x4	SS	†1185	1185	....	....	....	....	....
HUDSON																			
Super-6	6-3½x5	29.4	Deleo	Own	Deleo	D	3	125½	35x4½	SS	1650	....	1650	1950	2175	2925	....
HUPMOBILE																			
	4-3½x5½	22.5	A.Kent	Zenith	Wsths	D	3	119	34x4	SS	1185	1185	....	....	1735	....	....
N-U	4-3½x5½	22.5	A.Kent	Zenith	Wsths	D	3	134	35x4½	SS	....	....	1340	....	....	....	....
INTER-STATE																			
T	4-3½x5	19.6	Remy	Sobebler	Remy	C	3	110	33x4	SS	850	850	†995	....	....	....	1250
JACKSON																			
349	8-3 x3½	28.8	A-Lite	Zenith	A-Lite	DP	3	118	34x4	SS	1295	1295	†1295	....	....	....	....
34-A	4-3½x5	19.6	Conn	Sobebler	A-Lite	C	3	112	33x4	SS	....	985	....	....	....	....	....
348-A	8-2½x4½	26.4	Conn	Sobebler	A-Lite	C	3	112	33x4	SS	....	1195	....	....	....	....	....
68-A	8-3½x4½	30.3	Conn	Sobebler	A-Lite	C	3	124	34x4½	QD	....	....	1685	....	....	....	....
JEFFERY																			
Four	4-3½x5½	23.5	Dixie	Stmbg	Bijur	DP	3	116	34x4	SS	....	....	1095	....	1260	....	....
Six	6-3½x5½	29.4	Dixie	Rafid	Bijur	DP	3	125	34x4	SS	1335	....	1365	....	1530	....	....
JORDAN																			
Sixty	6-3½x5½	29.4	Bosch	Stmbg	Bijur	DD	3	127	35x4½	SS	1650	†1750	1650	2300	2350	3000	....
KING																			
E	8-3 x5	28.8	A.Kent	Ball	W.Lnrd	DP	3	120	34x4	SS	†1585	‡1585	1585	....	2150	....	....
KISSEL																			
642	6-3½x5½	31.54	Eismn	Stmbg	Own	DD	3	126	34x4	SS	....	1650	1850	....	2000	....	....
100-pt.	6-3½x5	35.3	Remy	Stmbg	Own	C	3	117	33x4	SS	†1195	1195	....	1635	1950	....	1635
KLINE																			
638	6-3½x4½	25.3	Wsths	Rafid	Wsths	DP	3	120	34x4	SS	1175	1195	†1195	....	....	....	....
LAUREL																			
35	4-3½x4½	33.8	Dixie	Sobebler	Disco	D	3	112	32x3½	QD	†895	850	885	....	....	....	....
LEXINGTON																			
6-O-17	6-3½x4½	25.4	Conn	Rafid	Wsths	DD	3	116	32x4	QD	†1185	1185	....	1350	1350	....	....
6-P	6-4½x5½	37.2	A.Kent	Stmbg	Wsths	C	3	144 133	36x4½	QD	†2675	....	2675	....	....	....	....
PARTIN-PALMER																			
20	4-3½x4½	15.6	Conn	Sobebler	A-C	DD	3	96	30x3½	C	545	....	....	....	....	....	....
32	4-3½x5	19.6	Conn	Carter	Disco	DD	3	110	32x3½	C	....	695	....	....	....	....	....

*6-passenger. †4-passenger. ‡3-passenger.

[illegible]																			
6-25	6-3½x4½	25.4	Deleo	Stmbg	Deleo	C	3	117	32x4	C	†1095	1095	1095	....	....	....	....
PATHFINDER																			
2B-TO-3C12-3½x5	39.6	Deleo	Stmbg	Deco	DD	3	135	35x5	SS	....	....	3250	....	....	....	....	....
PEERLESS																			
56-2	8-3½x5	38.8	A.Kent	Special	G & D	DD	3	125	35x4½	SS	†1890	....	1890	2700	2750	3260	....
PHIANNA																			
M	4-3½x6	24.9	Bosch	H & N	WLnd	DD	4	...	32x4½	....	Chassis	....	3600	....	....	....	....
PIERCE-ARROW																			
28-C-4	6-4 x5½	38.4	Bosch	Own	Wsths	C	4	134	36x4½	QDC	4600	4600	†4600	5630	5870	....	....
48-B-4	6-4½x5½	48.6	Bosch	Own	Wsths	C	4	142	37x5	QDC	4900	4900	5000	6060	....	....	....
66-A-4	6-5 x7	60	Bosch	Own	Wsths	C	4	147½	38x5½	QDC	†5000	5900	6000	....	....	....	....
PILOT																			
6-45	6-3½x5	28.4	Deleo	Zenith	Deleo	DP	3	119	32x4	SS	†1150	1150	....	....	....	....	....
PREMIER																			
6-B	6-3½x5½	37.3	Deleo	Johnson	Deleo	DP	3	125½	35x4½	SS	†1895	....	1895	....	2900	3150	....
PRINCESS																			
4-36	4-3½x4½	23.5	Splitdorf	Schebler	Disco	D	3	106	32x3½	....	775	775	‡775	....	....	....	....
PULLMAN																			
434-32	4-3½x4½	23.5	Dixie	Stmbg	Splitdorf	D	3	114	31x4	SS	825	825	†825	....	....	....	....
REGAL																			
4-32	4-3½x4½	19.6	Heinse	Carter	Heinse	C	3	108	30x3½	DC	....	745	....	....	....	....	....
F	8-3 x4½	28.8	....	Johnson	Dyneto	C	3	115	32x4	SS	1200	....	....	....	....	....	....
REPUBLIC																			
E	6-4½x5	48.3	Deleo	Rafid	Deleo	C	4	133	36x4½	SS	....	†2950	2950	....	....	....	....
REO																			
M	6-3½x5½	30.4	Remy	Rafid	Remy	DD	3	126	34x4½	SS	....	†1150	1150	....	1750	....	....
R	4-4½x4½	27.2	Remy	Johnson	Remy	DD	3	115	34x4	SS	‡875	875	....	....	....	....	1025
RICHMOND																			
6-17	6-3½x5	29.4	Deleo	Stmbg	Deleo	C	3	124	35x4½	....	....	....	....	....	....	....	....
4-35	4-4 x4½	25.6	Dixie	Stmbg	Deleo	C	3	124	35x4½	....	900	900	925	....	....	....	....
ROAMER																			
R.A.	6-3½x5	23.4	Bosch	Stmbg	Bijur	D	3	127	34x4	SS	2150	1850	....	....	....	....	....
ROSS																			
C	8-3½x5	33.8	A.Kent	Zenith	W.Lnrd	DD	3	120	35x4½	SS	‡1550	†1550	1550	....	....	....	....
SAXON																			
B-5-R	4-2½x4	12.1	A.Kent	Rebh	Wagner	DD	3	96	30x3	DC	495	....	....	....	....	....	....
S-4	6-2½x4½	19.8	Remy	Rafid	Wagner	DD	3	112	32x3½	SS	....	865	....	....	....	....	....
SCRIPPS-BOOTH																			
D	8-2½x3½	22.0	Remy	Zenith	Wagner	DD	3	120	32x4	SS	†1285	....	....	....	....	....	1460
G	4-3½x4	24.5	Remy	Zenith	Remy	C	3	110	30x3½	C	935	....	....	1450	....	....	....
SIMPLEX																			
5	6-4½x6½	45.9	Eismn	Nwcmb	Bosch	D	4	143½	37x5r	QDC	Chassis	6000	....	....	....	....	....
SINGER																			
17	6-4 x5½	38.4	Bosch	Rafid	Wsths	DD	4	136	35x5	QD	3500	†3500	3500	....	....	4600	....
STANDARD																			
8	8-3½x5	38.8	Splitdorf	Zenith	Apple	D	3	127	35x4½	....	†1950	....	2000	....	....	3500	2500
STANLEY																			
Stmr	2-4 x6	....	....	....	....	..		130	34x4½	SS	‡2300	2200	2300	....	....	....	....
STEARNS																			
SKL4	4-3½x5½	22.5	Remy	Schebler	Wsths	DD	3	119	34x4	QDC	††1450	1450	....	2050	....	2900	2050
SK8	8-3½x5	33.8	Remy	Rafid	Wsths	DD	3	123	35x4½	QDC	‡2150	....	2150	2900	....	3500	....
STEPHENS																			
60-65	6-3½x4½	25.3	Conn	Zenith	A-Lite	DD	3	115	32x4	....	‡1150	1150	....	....	....	....	....
STEWART																			
T	6-3½x5	29.4	Bosch	Rafid	Wsths	D	3	127	34x4½	SS	†1950	....	1950	....	....	....	....
STUDEBAKER																			
SF-4-40	4-3½x5	24.2	Remy	Schebler	Wagner	C	3	112	34x4	SS	‡930	....	940	....	....	....	1140
ED-6-50	6-3½x5	36.32	Remy	Schebler	Wagner	C	3	122	34x4	SS	‡1170	....	1180	1750	1700	2900	1280
STUTZ																			
R	4-4½x5½	36.1	Bosch	Stmbg	Remy	C	3	130	34x4½	SS	2275	†2550	*2550	....	....	....	....
SUN																			
17	6-3½x5	28.4	Remy	Rafid	Remy	DP	3	116	34x4	SS	†1145	1095	1145	....	1295	....	....
VELIE																			
28	6-3½x4½	25.3	Remy	Stmbg	Remy	DP	3	115	32x4	SS	1115	1135	†1135	1750	1685	....	....
27	6-3½x5½	29.4	Remy	Stmbg	Remy	DP	4	124	35x4½	SS	....	....	1600	....	....	....	....
WESTCOTT																			
8-17	6-3½x5½	29.4	Deleo	Rafid	Deleo	DD	3	125	35x4½	SS	1590	1590	1690	....	....	....	{2190 2000
WHITE																			
GAH	4-3½x5½	22.5	Bosch	Own	Own	P	4	115	32x4	QDC	‡2650	2700	....	....	....	....	....
GED	4-4½x6½	28.9	Bosch	Own	Own	P	4	133½	36x4½	QDC	3750	....	3800	....	....	....	....
16-Valve	4-4½x5½	28.9	....	Own	L.N.	P	4	137½	37x5	....	....	....	4600	....	....	....	....
WILLYS-KNIGHT																			
88-4	4-4½x4½	27.2	Conn	Titan	A-Lite	C	3	121	34x4½	SS	....	....	1285	....	1950	1950	....
WILLYS																			
85-6	6-3½x5½	29.4	Conn	Titan	A-Lite	C	3	125	35x4½	SS	....	....	1325	....	....	....	....
WINTON																			
33	6-3½x5½	33.7	Bosch	Rafid	Bijur	DD	4	128	36x4½	QD	2685	2685	2735	3600	3900	3900	....
48	6-4½x5½	48.6	Bosch	Rafid	Bijur	DD	4	138	37x5	QD	3500	3500	3500	4500	4750	4750	....
YALE																			
8	8-3½x4½	31.25	Remy	Rafid	Disco	DD	3	126	34x	....	....	....	1350	....	....	....	....

*6-passenger. †4-passenger; ‡3-passenger

ABBREVIATIONS—"G & D" Gray & Davis, "A-Lite" Auto-lite, "Wsths" Westinghouse. "Eismn" Eisemann "A.Kent" Atwater Kent, "Emrsn" Emerson, "Sevsn" Sevison, "Undec" Undecided, "Brling" Berling, "Kngstn" Kingston, "Natnl" National, "W.Lnrd" Ward Leonard, "U S L" United States Lighting, "Conn" Connecticut, "Nwcmb" Newcomb, "N E" North East, "A-C" Allis-Chalmers, "L-N" Leece-Neville, "O M" Owen Magnetic, "B-Rshm" Bosch-Rushmore, "Mgnto" Magneto, "Tltsn" Tillottson, "Atzr" Atomizer, "Rebh" Reichenbach. Clutches: "C" Cone, "P" Plate, "DD" Dry Disk, "DP" Dry Plate, "D" Disk, "G" Gearless, "F" Friction. Rims: "Q D" Quick Detachable, "SS" Straight Side, "C" Clincher, "QDR" Quick Detachable Reversible, "QDC" Quick Detachable Clincher, "R & M" Robbins & Myers.

NOTE—The figures given in columns underneath 2-, 5- and 7-passenger, represent the list catalog prices of the models. Where a tire size is given, as for instance "37x5½r," it means that the rear tires are 37x5½ and the front are of smaller dimensions.

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Coming Events

Shows

Dec. 30-Jan. 6...Cleveland, Ohio, Sixteenth Annual Show, Wigmore Coliseum, Cleveland Automobile Show Co.

Jan. 6-11.....Milwaukee, Wis., Ninth Annual Show, Milwaukee Automobile Dealers, Milwaukee Auditorium.

Jan. 6-13.....New York, seventeenth Automobile Chamber of Commerce, Grand Central Palace.

Jan. 12-20.....Philadelphia, Pa., Show, Philadelphia Automobile Trade Assn., Commercial Museum.

Jan. 15, 16, 17....Oakland, Cal., Second Annual Automobile Salon de Luxe, Oakland Hotel. Ivan R. Gates, Mgr.

Jan. 19-24.....Manchester, N. H., Show, Academy.

Jan. 20-27.....Detroit, Mich., Sixteenth Annual Show, Detroit Automobile Dealers Assn.

Jan. 20-27.....Montreal, Can., Montreal Automobile Trade Assn.

Jan. 22-27.....Rochester, N. Y., Ninth Annual Show, Rochester Automobile Trades Assn., Exposition Park.

Jan. 23-27.....Lancaster, Pa., Western Market House, Lancaster Automobile Trade Assn.

Jan. 23-27.....Baltimore, Md., Show, Fifth Regiment Armory.

Jan. 23-27.....Allentown, Pa., Show, Lehigh Automobile Trade Assn.; Peter Leisenring, Mgr.

Jan. 24-27..... Lewiston, Pa., First Annual.

Jan. 25-27.....Asheville, N. C., Asheville Automobile Trade Association.

Jan. 27-Feb. 3....Chicago, Seventeenth Annual Show, Coliseum and First Regiment Armory.

Jan. 27-Feb. 3....Columbus, O., Fourth Annual Columbus Auto Show Co., Memorial Hall.

Jan. 27-Feb. 5....York, Pa., York Automobile Dealers' Association.

Jan. 29-Feb. 3....Wilmington, Del., Hotel Du Pont; J. H. Nixon, Mgr.

Jan. 29-Feb. 3.... Buffalo, N. Y., Fifteenth Annual Show, Broadway Auditorium, Buffalo Automobile Dealers' Assn.

Feb. 3-10.....Minneapolis, Minn., Twin Cities Automobile Show, Minneapolis Automobile Trade Assn.

Feb. 5-10.....Bangor, Me., Show, Bangor Automobile Assn., Auditorium.

Feb. 7-10..... Bay City, Mich., Automobile and Accessories, Armory. F. D. Shaver, Mgr.

Feb. 7-11.....Kalamazoo, Mich., State Armory, Kalamazoo Automobile Dealers' Assn.

Feb. 10-17.....Hartford, Conn., Hartford Automobile Dealers' Assn., State Armory.

Feb. 10-18.....San Francisco, Cal., Show, San Francisco Motor Car Dealers' Assn., Exposition Auditorium, G. A. Wahlgreen, Mgr.

Feb. 12-17.....Louisville, Ky., Tenth Annual Show, First Regiment Armory, Louisville Automobile Dealers' Assn.

Feb. 12-17.....Kansas City, Mo., Show, Kansas City Motor Car Dealers' Assn.

Feb. 12-19.....Indianapolis, Ind., Indianapolis Automobile Trade Assn., Steinhart Bldg.

Feb. 14-17.....Peoria, Ill., Show, Automobile and Accessory Dealers' Assn., Coliseum.

Feb. 17-24.....Albany, N. Y., Sixth Annual, State Armonry, Albany Automobile Dealers' Assn.

Feb. 17-24.....Newark, N. J., Newark Automobile Dealers, First Regiment Armory, Claude E. Holgate, Mgr.

Feb. 19-24.....Portland, Me., Exposition Building.

Feb. 19-24.....So Bethlehem, Pa., Third Annual, Coliseum. J. L. Elliott, Mgr.

Feb. 19-24.....St. Louis, Mo., Show, St. Louis Automobile Manufacturers' and Dealers' Assn., Overland Building.

Feb. 19-24.....Bridgeport, Conn., Fourth Annual Show, State Armory. R. B. Stelber, Mgr.

Feb. 19-24.....Duluth, Minn., Show, New Armory Bldg., Duluth Automobile Dealers' Assn.

Feb. 19-24.....Syracuse, N. Y., Show, State Armory, Syracuse Automobile Dealers' Assn., H. T. Gardner, Mgr.

Feb. 19-24.....Des Moines, Iowa, Eighth Annual Show, Des Moines Auto. Dealers' Assn. C. G. Van Vliet, manager.

Feb. 19-24.....Grand Rapids, Mich., Eighth Annual Show, Automobile Business Association of Grand Rapids, Waters Bldg.

Feb. 19-24.....Springfield, O., Memorial Hall, Springfield Automobile Trade Asso. C. S. Burke, secretary.

Feb. 24-Mar. 6...Brooklyn, N. Y., Sixth Annual, Brooklyn Motor Vehicle Dealers' Assn., Twenty-third Regiment Armory.

Feb. 26-Mar. 3...Omaha, Neb., Twelfth Annual Show, Omaha Automobile Show Assn., Clargke G. Powell, Mgr.

Mar. 1, 2, 3.....Urbana, Ill., Show, Automobile Trade Assn. of Champaign Co., Armory of the University of Illinois.

Mar. 3-10.....Boston, Mass., Fifteenth Annual Show, Boston Automobile Dealers' Assn., C. I. Campbell, Gen. Mgr.

Mar. 6-10.....Fort Dodge, Iowa, Sixth Annual Show, New Terminal Warehouse.

Mar. 14-17.....Davenport, Iowa, Show, Coliseum Bldg., Tri-City Automobile Trade Assn.

Mar. 13-23.....Cedar Rapids, Ia., Show, Cedar Rapids Automobile Trade Assn.

General Events

Jan. 6-13.....New York, Mid-Winter Meeting of Society of Automobile Engineers, Engineering Society Bldg.

Jan. 9.....New York, Annual Banquet of National Automobile Chamber of Commerce at Waldorf-Astoria.

Jan. 9-10.....Fort Dodge, Iowa, State Convention, Iowa Retail Automobile Dealers' Assn.

Jan. 10.....New York, N. Y., Motor & Accessory Manufacturers, 33 West 42nd St., Meetings—Executive Committee, Banquet Committee. Finance Committee, Board of Directors. Also Thirteenth Annual Meet- at 3 o'clock, and Ninth Annual Banquet at Waldorf at 7.30.

Jan. 11.....New York, Motor and Accessory Manufacturers, 22 West 42nd St. Meeting—Board of Directors.

Jan. 11.....New York, Annual Banquet, Society of Automobile Engineers.

Jan. 24-26..... Chicago, Second Annual Meeting National Association of Automobile Accessory Jobbers, Congress Hotel.

Feb .....Convention Minnesota Retail Automobile Dealers Association.

STUDEBAKER KANSAS CITY BUSINESS INCREASED 88% IN 1916

KANSAS CITY, MO., Dec. 29—W. S. Williams, manager of the Kansas City branch of the Studebaker Corp., states that the company's business in this territory during 1916 showed an increase of 86 per cent over the business done in 1915, including all types of cars. The commercial car business increased 78 per cent during the same time.

Rex Is Looking Forward

NEW YORK, Jan. 2—The Rex Ignition Mfg. Co. will have its annual salesmen's convention on Jan. 3, 4 and 5. This convention is a feature with the Rex organization, in which the old year's review and the new year's plans are blended with a social program. Meetings of the sales staff and distributers will be held twice daily, the evening being devoted variously to a formal dinner, a beefsteak, and for the last evening, Jan. 5, a theater party.

On the last evening the results of the year's selling effort will be marked by the distribution of substantial bonuses to the leaders in sales for the year.

Motor Securities Quotations

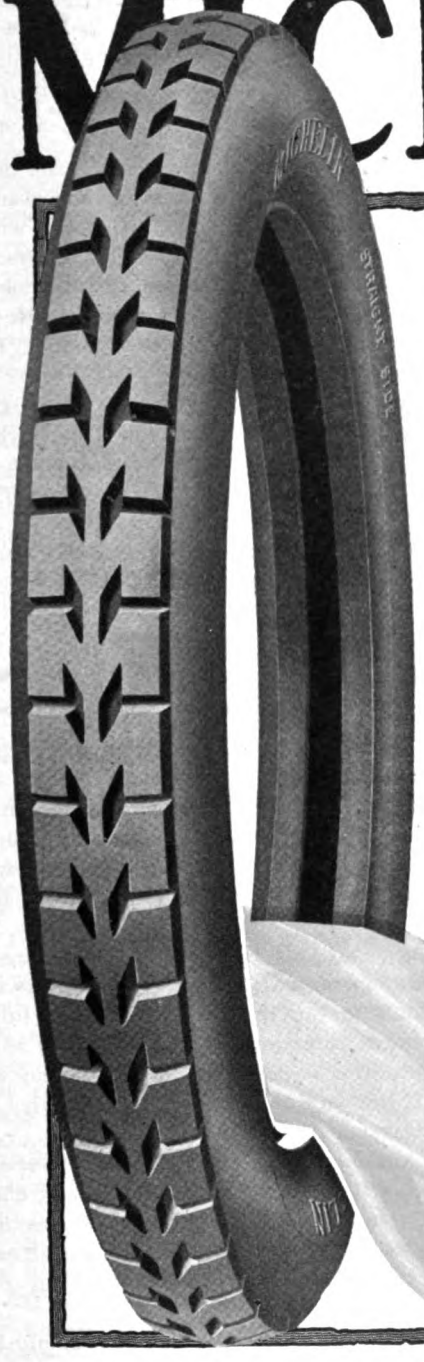
	Dec. 29, 1916 Bid	Asked
Ajax Rubber Co.	72	73
J. I. Case T. M. Co. pfd.	86	90
Chalmers Motor Co. com.	30	33
Chevrolet Motor Co.	122	130
*Chandler Motor Car Co.	97½	99¼
Fisher Body Corp. com.	39	41
Fisher Body Corp. pfd.	92	94
Fisk Rubber Co. com.	75	..
Fisk Rubber Co. 1st pfd.	107	112
Fisk Rubber Co. 2nd pfd.	101	105
Firestone Tire & Rubber Co. com.	140	145
Firestone Tire & Rubber Co. pfd.	107	108
*General Motors Co. com.	600	800
*General Motors Co. pfd.	120	125
*B. F. Goodrich Co. com.	59¼	59¾
*B. F. Goodrich Co. pfd.	111	112
Goodyear Tire & Rubber Co. com.	280	287
Goodyear Tire & Rubber Co. pfd.	106	108
Grant Motor Car Corp.	6	7
Hupp Motor Car Corp. com.	3	4
International Motor Co. com.	..	17
International Motor Co. 1st pfd.	..	80
International Motor Co. 2nd pfd.	..	50
*Kelly-Springfield Tire Co. com.	60	61
*Kelly-Springfield Tire Co. 1st pfd	93	95
*Lee Rubber & Tire Corp.	27½	28
*Maxwell Motor Co. com.	47½	48
*Maxwell Motor Co. 1st pfd.	68	69¼
*Maxwell Motor Co. 2nd pfd.	34	37
Miller Rubber Co. com.	..	250
Miller Rubber Co. pfd.	106	107
Packard Motor Car Co. com.	165	170
Packard Motor Car Co. pfd.	99	102
Paige-Detroit Motor Car Co.	39	40
Peerless Truck & Motor Corp.	16	20
Portage Rubber Co.	170	179
†Regal Motor Car Co. pfd.	25	..
Reo Motor Car Co.	39¾	40¼
Saxon Motor Car Corp.	62	66
Springfield Body Corp. com.	75	82
Springfield Body Corp. pfd.	112	125
Standard Motor Cons. Co.	4½	5½
Stewart-Warner Speed. Corp. com	97	99
*Studebaker Corp. com.	103⅝	103⅞
*Studebaker Corp. pfd.	107⅝	108
Swinehart Tire & Rubber Co.	..	80
United Motors Corp.	45	46½
*U. S. Rubber Co. com.	61¼	61½
*U. S. Rubber Co. pfd.	112	114
White Motor Co.	48	48¾
*Willys-Overland Co. com.	35	35¼
*Willys-Overland Co. pfd.	96	97

*At close Dec. 29, 1916. Listed N. Y. Stock Exchange. †Par, $10; all others, $100.

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January 6, 1917 THE SATURDAY EVENING POST

MICHELIN



The Combination that Means Tire Satisfaction

Michelin Universal Treads

The Michelin Universal Tread Non-Skid is as good a tire as money can make or buy.

It not only contains the very **best** *rubber and fabric, but so much* **more** *of each of them that it weighs from 12 to 15% heavier than the average non-skid.*

Michelin Red Inner Tubes

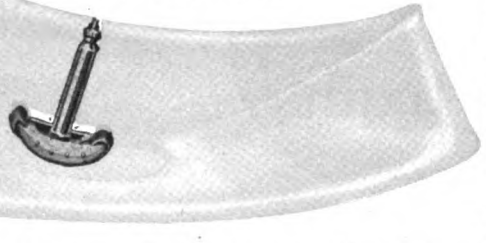
Ever since Michelin invented the pneumatic automobile tire and tube 22 years ago, Michelin Tubes have been recognized as the world's standard of quality.

Michelin Tubes do not grow brittle or porous with age. The exclusive process by which they are made on a **circular** *mandrel produces a truly ring-shaped tube which fits the casing perfectly without stretching or wrinkling. Consequently, the Michelin Tube possesses greater strength and durability, and does not puncture through pinching.*

Remember, that although of superior quality, Michelin Casings and Tubes are moderate in price. In justice to yourself, give them a trial.

Michelin Tire Co., Milltown, N. J.

Canada: Michelin Tire Co. of Canada, Ltd.
782 St. Catherine St., W., Montreal



To the Trade:—High Quality, Moderate Price and Unsurpassed Dealer-Cooperation make the 1917 Michelin Proposition a winner. Write or wire today for particulars.

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Is your car one of these?

Brewster	Hudson	Packard
Cadillac	Locomobile	Pierce-Arrow
Cole	Lozier	Rauch & Lang
Crane	Marmon	Rolls-Royce
Detroit-Electric	Mercer	Simplex
Franklin	Owen Magnetic	Stearns
Haynes		Winton

If you are the owner of a Waltham-equipped car, then you *know* what a perfect instrument of accuracy and beauty the Waltham Automobile Clock is. You *know* what an advantage it is to have an *absolutely reliable* timepiece on your car. You have ceased to consider an automobile clock an accessory. You consider it a necessity,—just as do the makers of the above cars, who now include the Waltham in their regular equipment.

But if your car is *not* Waltham-equipped, and if you have never bought yourself a Waltham, you are denying yourself a comfort and convenience of the utmost value to every motorist.

The only automobile clock



that always tells the truth

The Waltham Automobile Clock

It successfully resists the roughest shocks of the roughest roads, the wear and tear of vibration, and any and all changes of atmosphere or climate. It is the only automobile clock *always* accurate and *always* reliable under such handicaps, because it is the *only* timepiece in the world scientifically designed and constructed for automobiles and nothing else.

It has two mainsprings. It has a fifteen-jewel, stem-wind and stem-set movement which runs eleven days with one winding. An indicator on the dial gives notice three days before the movement runs down.

Its accuracy is so chronometer-like that you can set your watch by it. Its presence in your car is a *guarantee* of the right time all the time.

The Waltham Automobile Clock is made in a variety of styles, offering a choice of finish, and a selection of dials to suit car or taste. In its own field, the clock has the distinction and elegance of the fine Waltham watches, and harmonizes effectively with its surroundings in the handsomest of cars.

Your car should have a clock and that clock should be a Waltham. Inquire of your dealer in automobile accessories. Or if he doesn't have the Waltham, communicate with us.

WALTHAM WATCH COMPANY, WALTHAM, MASS.

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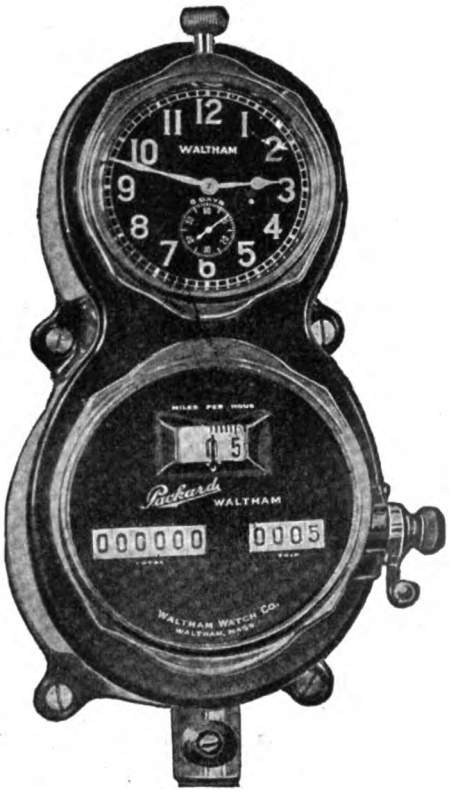
To every motorist who feels the need of a better speedometer

The Waltham Speedometer is the product of the genius, scientific experience, mechanical skill and manufacturing facilities of the world's greatest makers of fine timepieces. It bears the Waltham guarantee—insuring Waltham accuracy, Waltham thoroughness, Waltham durability, and Waltham distinction of appearance as well as of performance.

This new Waltham Speedometer has been perfected and manufactured so that the public may have an instrument which gives correct and dependable service at all times and under all conditions, to replace the ineffective and unsatisfactory speedometers in general use.

The Packard Motor Car Company has adopted and is using the Waltham speedometer for standard equipment on its 1917 cars, which together with the fact that the Waltham Watch Company manufactures and guarantees it, assures the public of an instrument of positive scientific precision.

Waltham Speedometer



The Waltham Speedometer as it appears in the 1917 Packard Twin Six Cars.

The principles that have been applied to this speedometer are extremely simple—so simple as to be "fool-proof." This overcomes at the start many of the difficulties in other makes of instruments. Special attention has been given to the flexible driving shaft (patented), which in other speedometers is a source of much trouble to the owner of a car. The Waltham shaft (patented), made of a special heat-treated nickel steel, is practically indestructible. This has been proven under severe laboratory and road tests.

The Waltham Speedometer is not affected by the extremes of heat, cold, altitude or climate incident to motor travel. Its registration of every speed of the car is instantaneous and accurate; moreover, the speed dial and odometer figures are legible not only from the driver's seat, but from the tonneau of the car. For test trips or touring with the "Blue Book," the trip odometer can quickly be reset to zero or any mileage desired—an exclusive and very desirable Waltham feature.

Agencies for rendering service:

Westinghouse Electric & Mfg. Co., 1207 Michigan Ave., Chicago.
Westinghouse Electric & Mfg. Co., 2025 Euclid Ave., Cleveland.
Westinghouse Electric & Mfg. Co., 157 West 54th St., New York.
Automobile Equipment & Service Company, 1435 Vine St, Philadelphia.
Westinghouse Electric & Mfg. Co., Amberson Ave. and Penna. R. R., Pittsburgh.

We are establishing other Service Agencies in all parts of the world and are interested in applications from reliable companies, able to render satisfactory service on a quality speedometer and act as distributors of Waltham Automobile Timepieces.



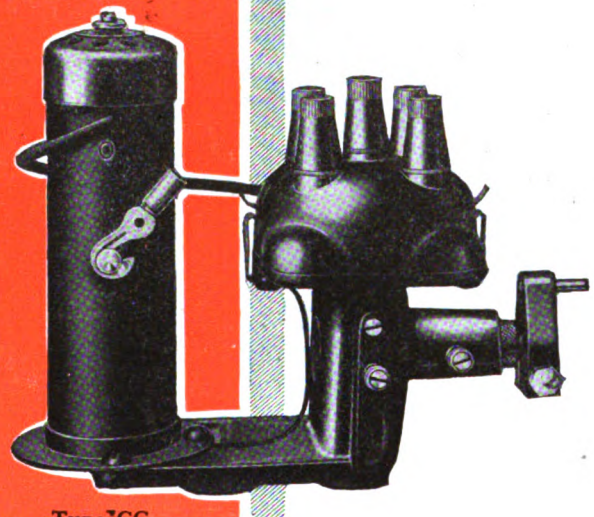
The Waltham Speedometer as it will appear on other high grade cars in the near future. (Names to be announced later.)

WALTHAM WATCH COMPANY, WALTHAM, MASS.

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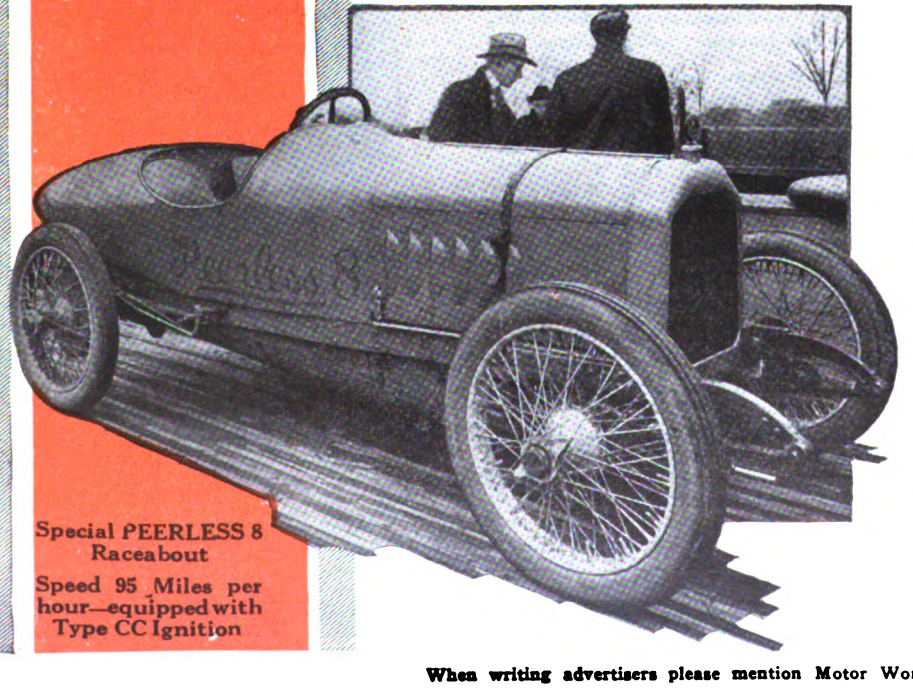
Atwater

Announcing Type CC *for* Magneto Replacement



Type CC
For Magneto Replacement

This new system, the most valuable contribution to scientific ignition practice of the past year, in addition to its use as standard equipment on many of the most prominent 1917 cars, is also offered as a magneto replacement outfit.



Special PEERLESS 8 Raceabout
Speed 95 Miles per hour—equipped with Type CC Ignition

The Atwater Kent Type CC Magneto Replacement outfit is intended especially for Maxwell, Overland and other cars provided with electric starting and lighting.

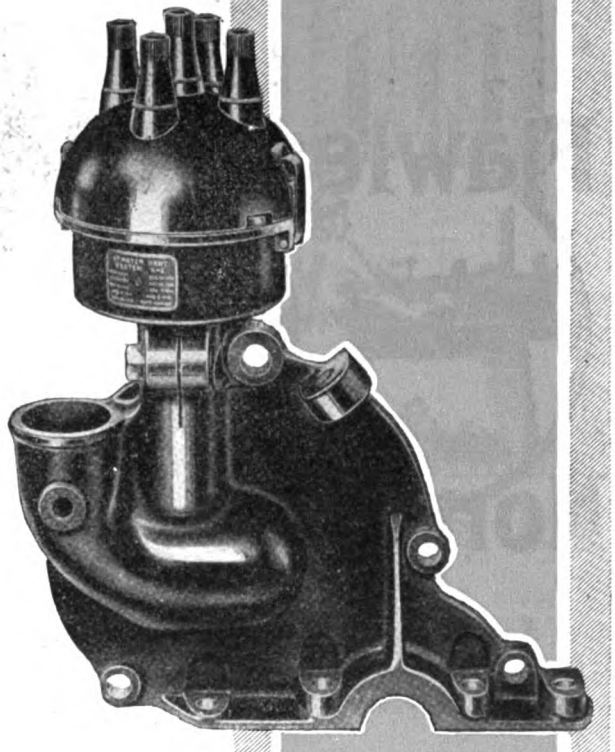
We also offer our K-3 Magneto Replacement system for use on cars not electrically equipped.

Dealers, accessory salesmen, garage and repairmen should write at once for full detailed information.

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Kent Ignition

Eighty per cent of all makes of cars manufactured during 1917 will be equipped with battery ignition—because of its greater efficiency. Not one car manufacturer adopting this type has ever gone back to the magneto.



Type for Ford Cars

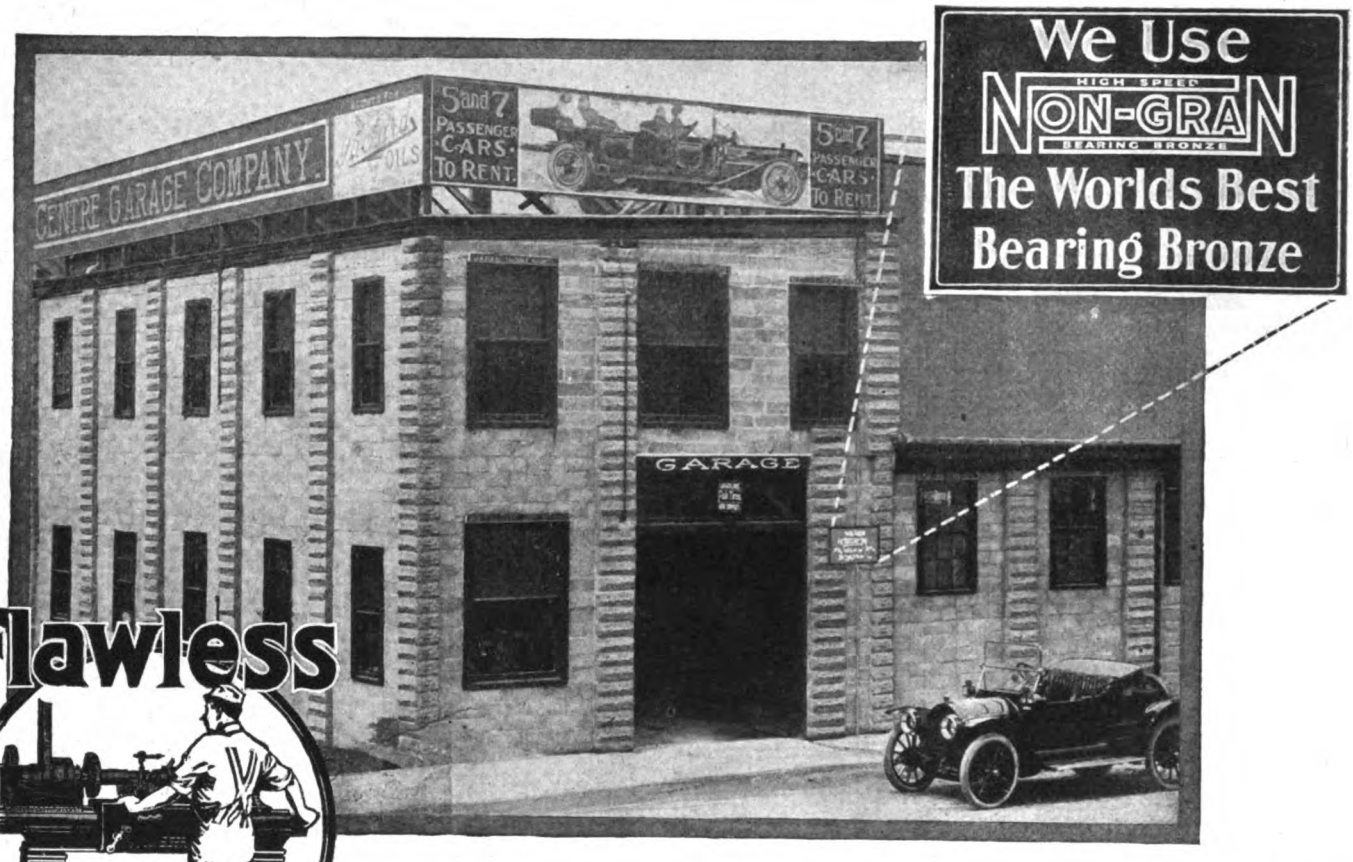
Atwater Kent has pioneered this movement and Atwater Kent is to-day the standard by which all equipment of this type is measured. Atwater Kent is the only ignition for magneto replacement which is widely advertised and sold by jobbers, dealers, garage and repairmen.

Mr. Dealer: Are you the Atwater Kent authorized dealer in your territory? Are you in a position to furnish your customers with modern ignition in place of their magneto equipment? If not write us for complete dealers' proposition and data.



Atwater Kent Mfg. Works
Philadelphia, U. S. A.

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Flawless



Non-Gran

LOOK FOR THIS SIGN

You will have no trouble in getting Non-Gran bushings.

The great majority of repairmen think enough of their work to use Non-Gran to back it up.

Repairmen have no trouble in getting the Non-Gran cored bars from which to make their bushings because they are handled by every good jobber in the land.

Practically all of America's quality built cars and motors are equipped with bushings of Non-Gran when they leave the factory.

Practically all taxicabs are repaired with Non-Gran bushings.

Practically all speed cars with a record are Non-Gran equipped.

These cars are Non-Gran equipped simply because Non-Gran wears longer and adds a degree of security not obtainable in any other bearing metal.

Bushings, you know, must stand the brunt of friction and wear in your car. Bushings are buffers, used to take the wear between moving parts where these parts join or meet.

There are scores of bushings in every car and when these begin to wear, *even slightly*, rattles and thumps, vibrations and power loss invariably result.

So, the life of a car before it begins to rattle and lose its power, depends almost wholly upon the quality of bushings used.

That is why quality-built cars, which almost invariably are Non-Gran equipped, wear so much longer than cars not so equipped.

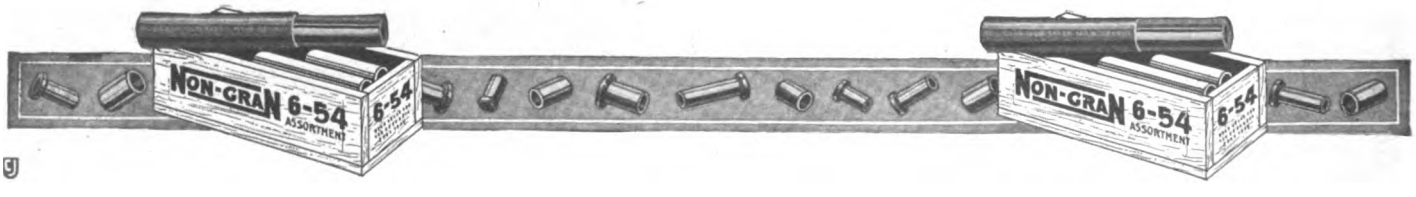
If you are not the fortunate owner of a car equipped with bushings of Non-Gran, do the next best thing—when you have your car overhauled tell the repairman to replace all worn bushings with bushings of Non-Gran.

Non-Gran bronze is conceded by leading manufacturers to be the finest, longest-wearing bearing bronze in the world.

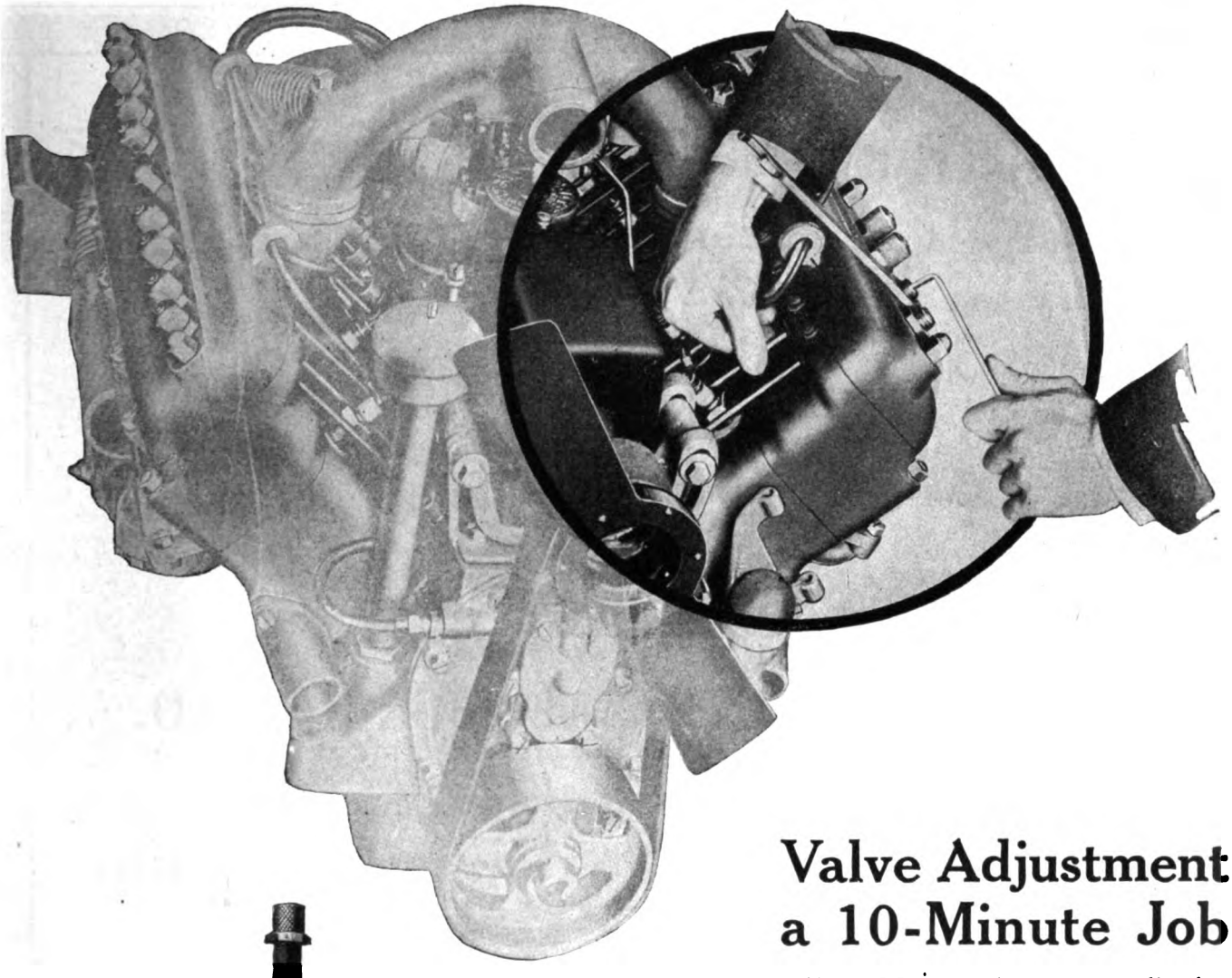
The added cost for Non-Gran bushings may be eight or ten dollars, but they will save you hundreds of dollars on future overhauling expense.

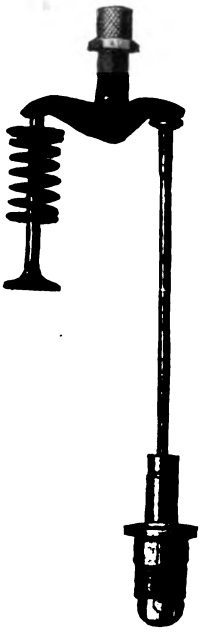
American Bronze Company
Berwyn · · · Pennsylvania

HIGH SPEED
NON-GRAN
BEARING BRONZE



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Assembling of valve reciprocating parts. Note adjusting screw and spherical fulcrum at top, roller valve-lifter at bottom.

Valve Adjustment a 10-Minute Job

In Ferro V-Type Motors, the valve adjusting screws are on the top of the cylinder-head cover, right within easy reach.

All that is required for taking up valve clearance is to unscrew a cap, loosen a locknut and turn the adjusting screw.

The car-owner himself can adjust all the valves in ten or fifteen minutes.

This big improvement was made possible by placing the valves in the head and using detachable heads without valve cages.

It is but one of a number of features that make Ferro V-Type Motors so desirable.

Write for booklet

THE FERRO MACHINE & FOUNDRY CO.
198-N Hubbard Avenue Cleveland, Ohio

FERRO MOTORS

Reg U.S.Pat Off

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American American

ARE YOU GETTING AXLES —OR PROMISES

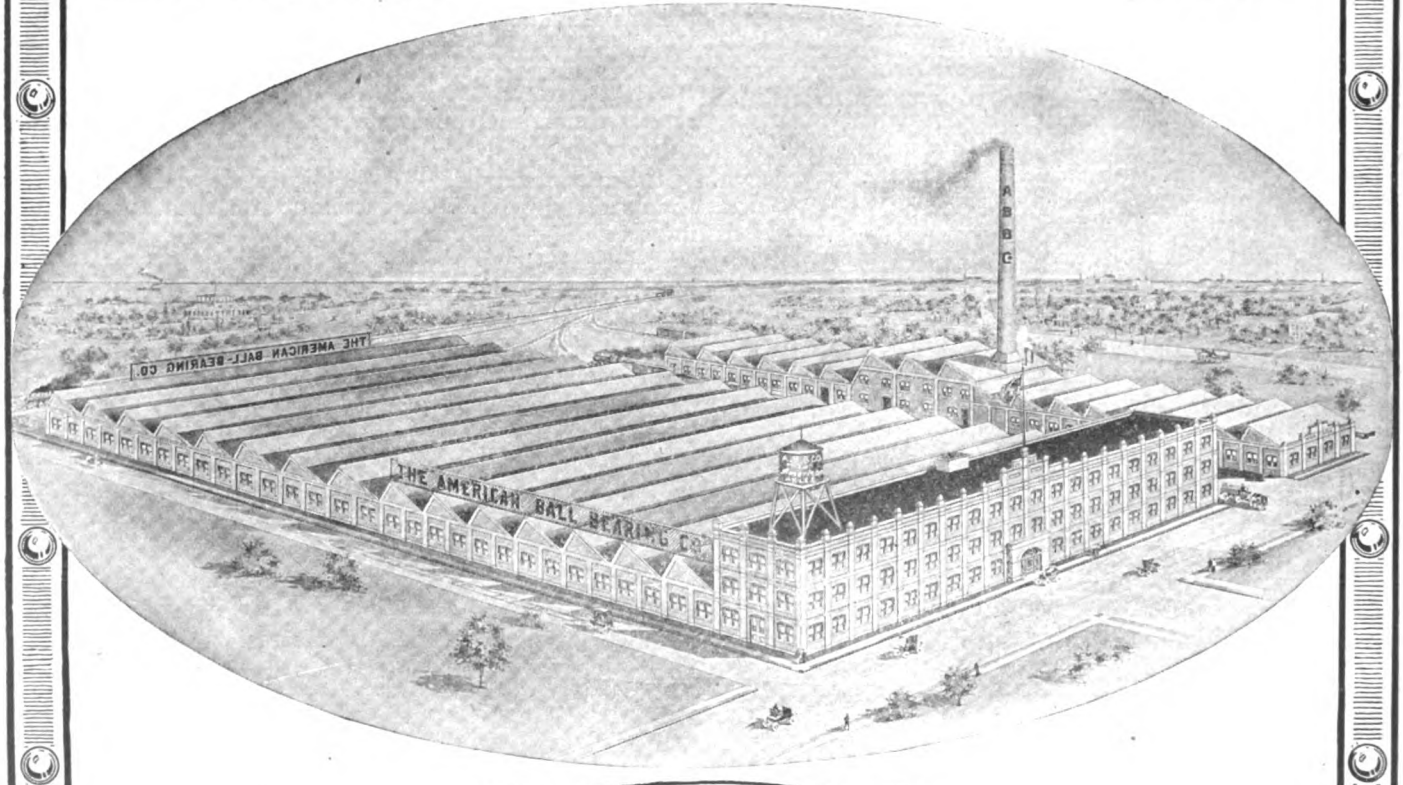
?

THE AMERICAN BALL-BEARING CO.

LICENSED UNDER THE KARDO COMPANY PATENTS

PIONEER AXLE BUILDERS OF AMERICA

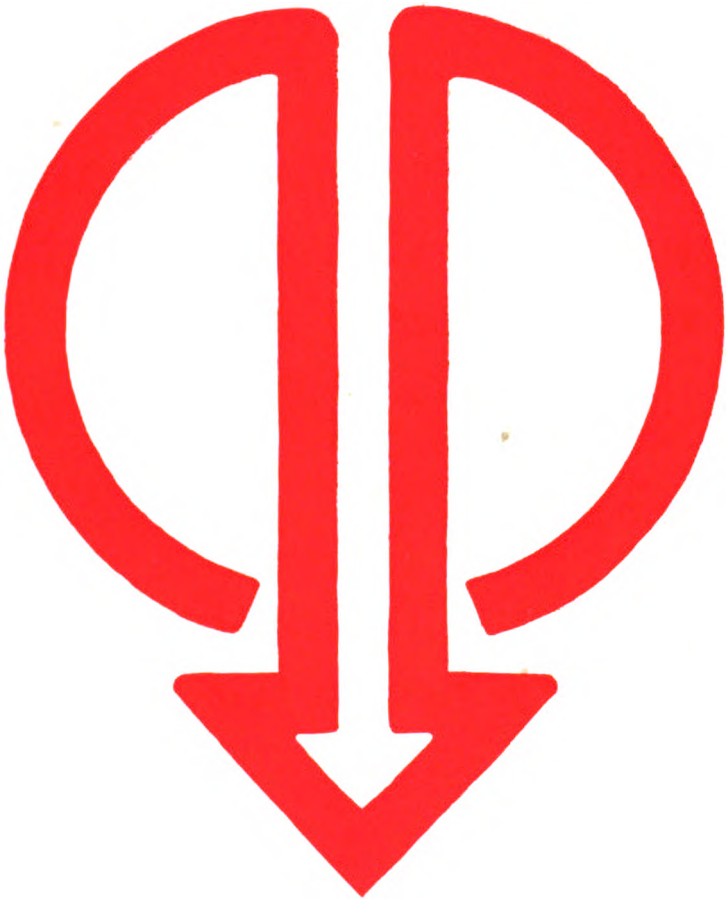
CLEVELAND OHIO



American

When writing advertisers please mention Motor World

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Now only a favored few know the virtues of ⚲

But, a little later, in this paper, we shall tell you—and every other user, dealer and maker—just what ⚲ does for cars, trucks and tractors.

We shall tell how ⚲ solves the last remaining big *internal* problem of power application.

(OVER)

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(Continued from preceding page)

You will know how ⏚ has put Messrs. Slip, Skid & Spin *out of business.*

So watch this space for ⏚ news.

Believe us, there is no bigger news for the gas-driven world.

Meantime, perhaps a friend of yours knows what ⏚ is. Ask him.

$1,000.00

For Sensible Letters

Later, in this space, we shall make public the terms on which you may win 50 to 500 dollars by five minutes dictation. Watch and see.

But—if you want *advance* information—address Box P-5, Motor World, New York.

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DIXIE 20TH CENTURY MAGNETO

The Plug with the Green Jacket



Lighting and Starting Systems

AMMETERS

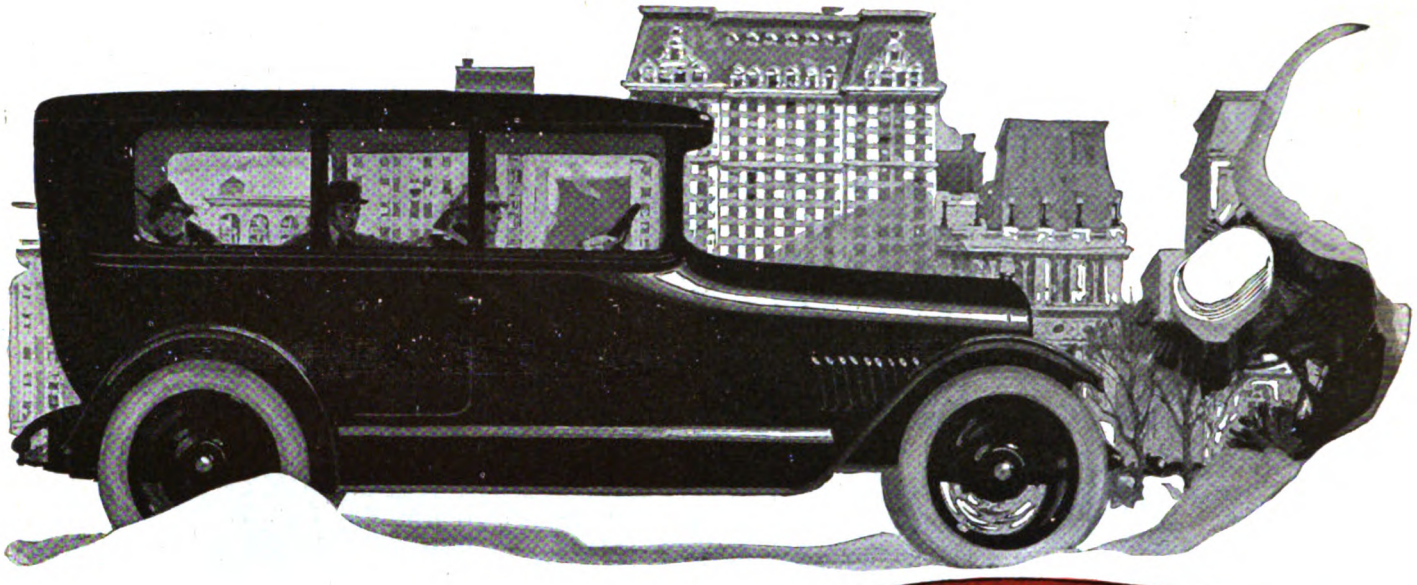
Conscientious manufacture and comprehensive service are prevailing characteristics of the Giant line of

SPLITDORF DEVICES

If you've the motor we've the RIGHT ignition for it

SPLITDORF ELECTRICAL COMPANY
NEWARK, NEW JERSEY

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The Toursedan

Motoring reaches the highest degree of luxury in the Cole-Springfield Toursedan. The car is about the handsomest thing on wheels. And it secures the comfort and convenience of passengers against all pranks of weather or roads. Yet the Toursedan is quickly and easily convertible into an open touring car. Price $2295.

Cole

We start 1917 with a production three times as great as that of last January.

The rapidly increasing demand for the Cole Eight would allow an even larger expansion.

But we prefer to grow with great care. It tends to a sounder stability.

We prefer to increase by logical and reasonable steps rather than by too spectacular strides. We consider the ultimate consumer *first*. Therefore we always take the utmost care to protect Cole Eight purchasers by painstaking, unhurried workmanship and the use of the best materials it is possible to obtain.

We are building for the future along the lines of established permanence.

Our long experience and our extensive facilities are devoted entirely to one fixed purpose—to one chassis—America's foremost Eight. We aim to obtain and maintain the highest standard in the manufacture of fine motor cars.

This constant, diligent and persistent effort towards bettering the best has placed us in a very advanced position in the motor car industry.

As a result, we start January shipping 200 per cent more cars than at this period last year.

United States Prices

Seven Passenger Cole-Springfield Toursedan,	$2295
Four Passenger Cole-Springfield Tourcoupé,	$2295
Seven Passenger Cole Eight Touring Car,	$1695
Four Passenger Cole Eight Roadster,	$1695

Prices f. o. b. factory

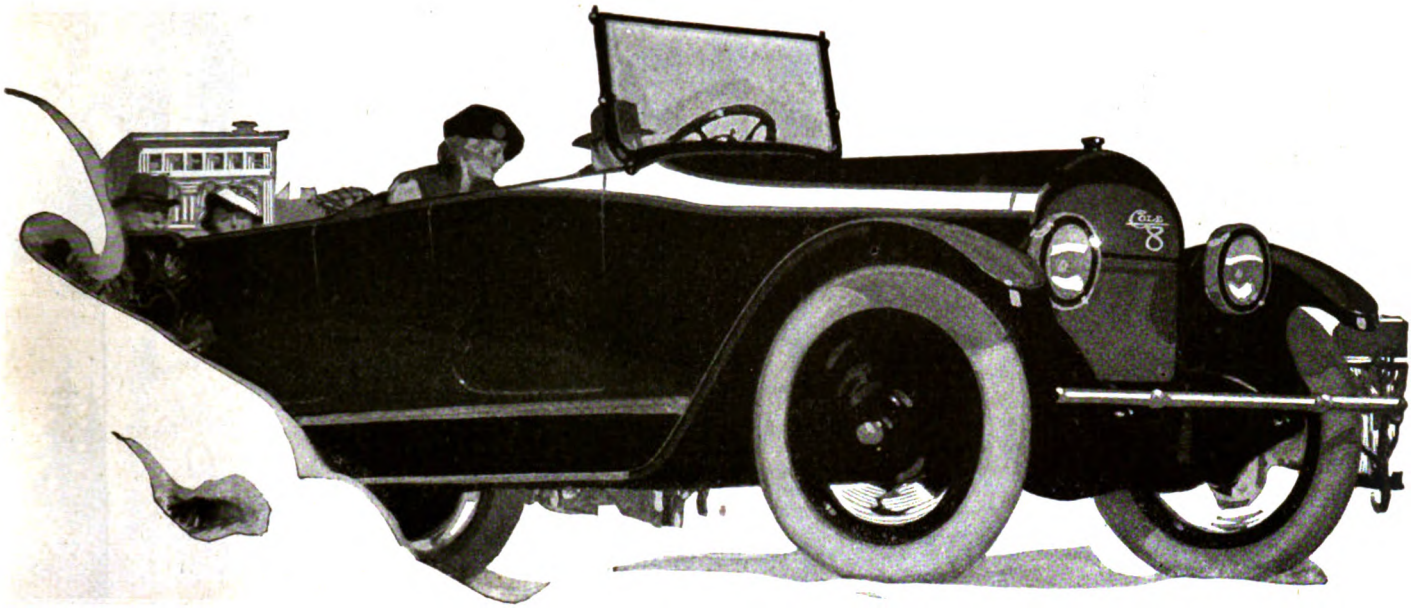
Canadian Prices

Seven Passenger Cole-Springfield Toursedan,	$3250
Four Passenger Cole-Springfield Tourcoupé,	$3250
Seven Passenger Cole Eight Touring Car,	$2395
Four Passenger Cole Eight Roadster,	$2395

Prices f. o. b. factory, duty paid

Cole Motor Car Company

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The Touring Car

The Cole Eight Touring Car exceeds your highest ideals of what a car should be. It has style, beauty, comfort—everything. The 70 horsepower motor is a marvel of power, speed and endurance. It is vitality itself. Its pick-up is swift and easy as the flight of a bird—and just as silent. It is responsive to your will as your hands or feet. Price $1695.

L E 8

We were the first manufacturers of eight cylinder cars to combine large size and tremendous power with light weight and economy of operation.

The famous chassis on which all Cole models are mounted is the largest, but relatively the lightest Eight built.

Last year we introduced the Springfield Type Body with such sweeping success that it was later adopted by the builder of practically every well known car.

The Toursedan and Tourcoupé are essentially and unmistakably Cole, even to their names—as well as the details of construction.

These were the first permanent, all-season cars—the first 8 cylinder automobiles to offer equal comfort and convenience, both winter and summer, all in one and the same unit, at a single price.

In these as in many other important and fundamental advanced features the Cole leads.

All Cole models will be shown at both the New York and Chicago shows. Be sure to see them.

No line could be more attractive to a wide-awake dealer—one who appreciates big selling values. If you are interested see us at the show.

Indianapolis, U. S. A.

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STEPHENS SIX

"Best by Test"

The Car With Punch

Punch is power under control, a symbol of supremacy.

In the prize ring, punch brings victory to the pugilist; under the shadow of the goal posts, and in the final seconds of play, punch carries a football team to a season's championship.

On the field of battle, punch drives battalions of troops to the enemy's trenches under the heaviest of fire; in the directors' rooms of great corporations, punch swings million-dollar business deals.

Punch raised Jack London and O. Henry to the heights of world's literary fame.

The automobile with punch challenges and conquers the deep sand, the steep hills, the rough roads, without a motor "knock" of protest.

Months of designing, building, testing and rebuilding are spent before an automobile has punch.

Punch in the Stephens Six Was Not a Chance Discovery

Expert automobile engineers, knowing the secrets of punch development—how to secure power and control it—designed the car. The finest of raw materials were selected for use in the Stephens Six. Skilled mechanics made the parts and assembled them. Back of the Stephens Six is a company with a priceless manufacturing experience of more than half a century.

Get behind the steering wheel of the Stephens Six and be convinced of its punch. Test the car's power by driving it at high speed over the open road or at a snail's crawl through city traffic.

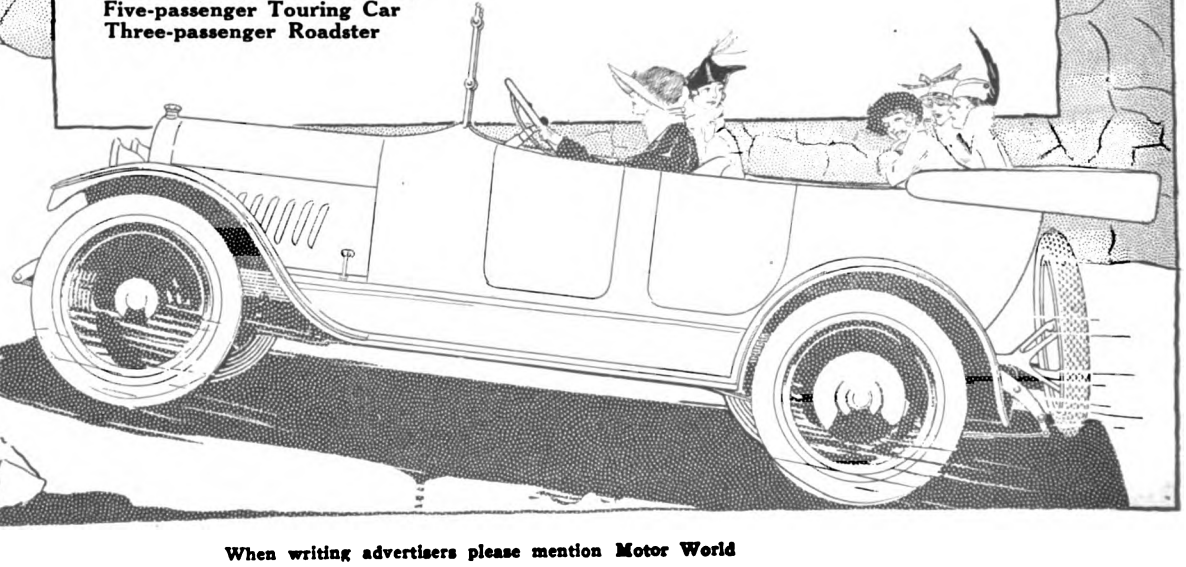
There is still an opportunity for a few agents with punch to secure Stephens Six contracts, some good territory being open. Our proposition is most attractive and our co-operation valuable.

At the Chicago Automobile Show the Stephens Six will be found one of the really worth while cars. We cordially invite you to call at Booth 13 in the Coliseum basement.

STEPHENS MOTOR

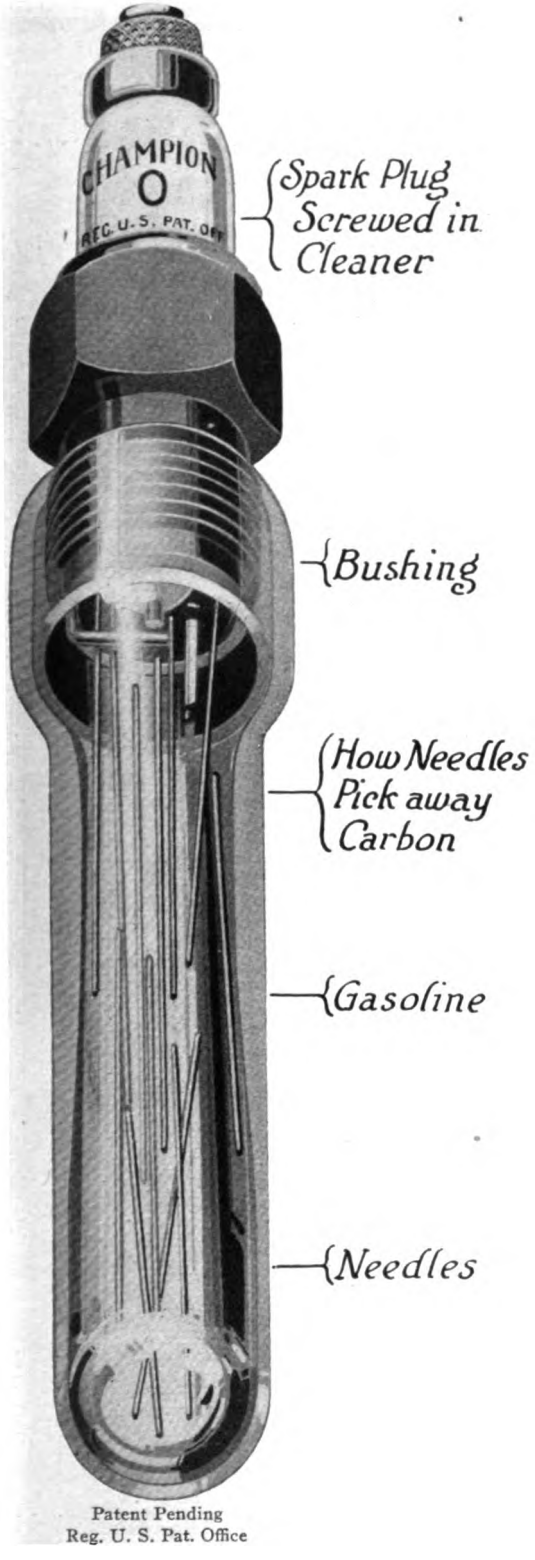
BRANCH OF MOLINE PLOW CO.
MOLINE, ILL.

Two body styles, each $1150
Five-passenger Touring Car
Three-passenger Roadster



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THE QUICK AND EASY WAY TO CLEAN YOUR PLUGS



Patent Pending
Reg. U. S. Pat. Office

CHAMPION "MINUTE" SPARK PLUG CLEANER

You don't even have to take the plugs apart.

No more fussing or fuming with emery paper! No more dirty, grimy hands! No more greasy clothes!

You fill the tube half full of gasoline—screw the plug into a bushing at the end—and then shake.

The needles pick the carbon from the porcelain while the gas dissolves the oil.

In a minute or two you have a clean set of plugs—good as new.

Could anything be simpler—or easier? The plugs become clean right before your eyes.

The Champion "Minute" Spark Plug Cleaner is the simple, sane and swearless way of doing a hard job quickly and easily.

It's one of the few things that cost little and are worth a lot.

Don't work and worry over dirty plugs another day. Order a Champion "Minute" Spark Plug cleaner now.

For sale by your jobber or dealer. If not, please write to us.

DEALERS!

The Champion "Minute" Spark Plug Cleaner is entirely new. It's a real necessity. Every motorist will want one. That means big business for you if you are well supplied. Order a good stock today.

PRICE

75c.

Champion Spark Plug Co.

1414 Upton Avenue Toledo, Ohio

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Farmers Own 72% of the Three Million Automobiles and Trucks Now in Use

They are your best market for all kinds of accessories and supplies for pleasure cars, trucks and motorcycles.

And here are the lines that will be easiest to sell to them because the manufacturers are **educating** them through good advertising in the Foremost Farm Papers:

LINES ADVERTISED IN FOREMOST FARM PAPERS

Starting and Lighting Systems—Gray & Davis, Inc., Boston, Mass.; The Wagner Electric Mfg. Co., St. Louis, Mo.; Prest-O-Lite Co., Inc., Indianapolis, Ind.

Horns—American Electric Co., State and 46th Sts., Chicago.

Oils—Valvoline Oil Co., New York, N. Y.; Indian Refining Co., New York, N. Y.

Tire Pumps—Mayo Mfg. Co., Chicago, Ill.

Spark Plugs—Champion Ignition Co., Flint, Mich.; Emil Grossman Mfg. Co., Inc., Brooklyn, N. Y.; Champion Spark Plug Co., Toledo, Ohio.

Magnetos—Bosch Magneto Co., New York, N. Y.

Clocks—Waltham Watch Co., Waltham, Mass.

Iron Cements—Smooth-On Mfg. Co., Jersey City, N. J.

Safety Terminals—James P. Blauvelt Co., Nyack, N. Y.

Puncture Patch—20th Century Tire Protector Co., Midlothian, Texas.

Skid Chains—American Chain Co., Inc., Bridgeport, Conn.

Snubbers—Gabriel Mfg. Co., Cleveland, Ohio.

Vaporizer—Gas Motor Efficiency Co., Janesville, Wis.

Insurance—Motorists Security Alliance, 327 LaSalle St., Chicago.

Bearings—Hyatt Roller Bearing Co., Detroit, Mich. Timken Roller Bearing Co., Detroit, Mich.

Steering Device—The Walker Mfg. Co., Chicago, Ill.

Hand Lamps—Central Telephone & Elec. Co., St. Louis, Mo.

Auto Tops—Wadsworth Mfg. Co., Detroit, Mich.

Auto Upholstery—DuPont Fabrikoid Co., Wilmington, Del.

Elec. Lanterns—Johnson, Smith & Co., 709 S. Dearborn St., Chicago.

Garage Heaters—Rose Mfg. Co., Philadelphia, Pa. Edwards Mfg. Co., Cincinnati.

Portable Garages—Butler Mfg. Co., Kansas City, Mo.

Feed Oilers—The Zinke Co., 1322 Michigan Ave., Chicago.

Tire Testers—Improved Gauge Mfg. Co., Syracuse, N. Y.

Shock Absorbers—The Temco Elec. Motor Co., Leipsic, Ohio.

Foot Warmers—Chicago Flexible Shaft Co., 228 LaSalle St., Chicago.

Cam Shafts—Muskegon Motor Specialties Co., Muskegon, Mich.

You can make any of these ads your ads by carrying the lines advertised and letting the farmers know you have the goods in stock.

To keep track of just what ads—in all your lines—**your** farmers are reading, you should read all the ads in these papers.

And to help you help yourselves while you are helping our advertisers, we will sell you a year's subscription to any or all of these papers at **Half** the regular price, named below.

FOREMOST FARM PAPERS

	Frequency	Circulation	Reg. Sub. Price
Successful Farming, Des Moines, Iowa	Monthly	800,000	$ .50
Farm Stock and Home, Minneapolis Minn	Semi-Monthly	140,000	.50
Southern Ruralist, Atlanta, Ga	" "	261,000	.50
Kimballs Dairy Farmer, Waterloo, Iowa	" "	184,000	.50
Gleaner and Business Farmer, Detroit, Mich	" "	114,000	.50
Inland Farmer, Louisville, Ky	" "	135,000	.50
Practical Farmer, Philadelphia, Pa	" "	80,000	.50
Fruit Grower, St. Joseph, Mo	" "	125,000	1.00
Western Farmer, Portland, Ore	" "	75,000	1.00
Total		1,914,000	$5.50

Write on your business letterhead and enclose check or money order.

Address Representative nearest to you.

Foremost Farm Papers

J. C. BILLINGSLEA
1119 Advertisers Bldg., Chicago

J. C. BILLINGSLEA
1408 Kresge Bldg., Detroit, Mich.



A. H. BILLINGSLEA
1 Madison Ave. New York

A. D. McKINNEY
3rd Nat'l Bank St. Louis, Mo.

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Oil Rots Rubber!

Knowledge of that fact led us to spare no expense nor effort to construct our Engine-Driven Tire Pumps to positively guarantee "No Oil Spray with the Air."

It is this standard of merit, as opposed to a much easier conception of building a pump down to a price, which has been influential in making the

KELLOGG ENGINE-DRIVEN Tire Pump

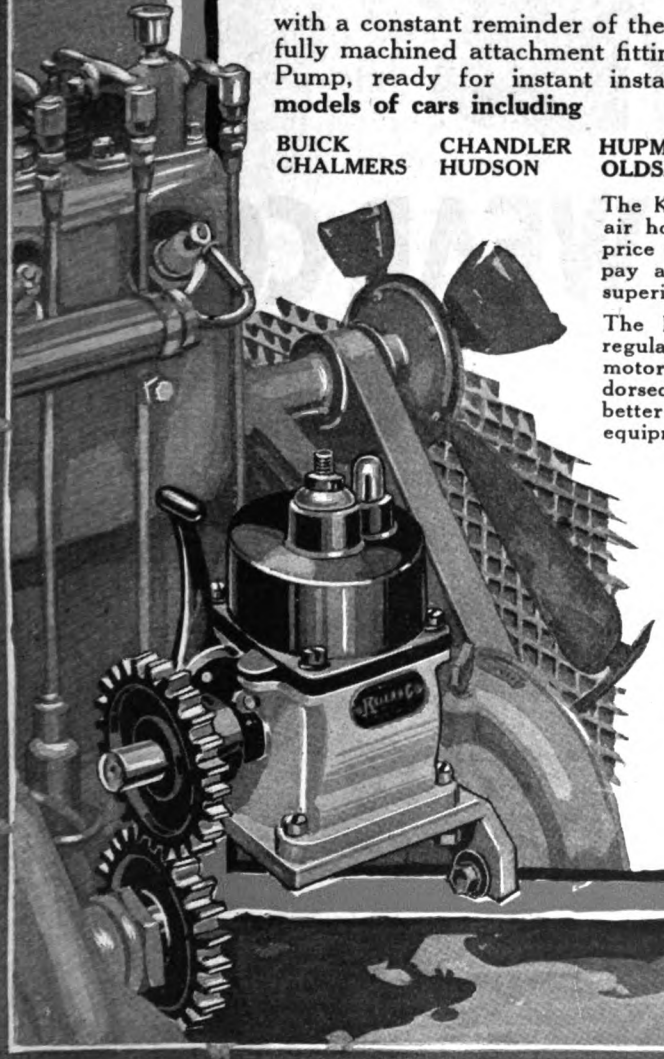
the recognized Standard of Engine-Driven Tire Pumps for Automobiles.

Our advertising and educational literature to the automobile owner has consistently pointed out these two important features—

"No Oil Spray with the Air"—Guaranteed
"All Metal Construction" — Everlasting

with a constant reminder of the fact that carefully designed and carefully machined attachment fittings are furnished with the KELLOGG Pump, ready for instant installation **on practically all makes and models of cars including**

BUICK CHANDLER HUPMOBILE OVERLAND REO
CHALMERS HUDSON OLDSMOBILE PAIGE-DETROIT STUDEBAKER



The KELLOGG Pump with attachment fittings, air hose and tire gauge is sold for $15.00—a price that every automobile owner is willing to pay as soon as he understands the Kellogg's superiority.

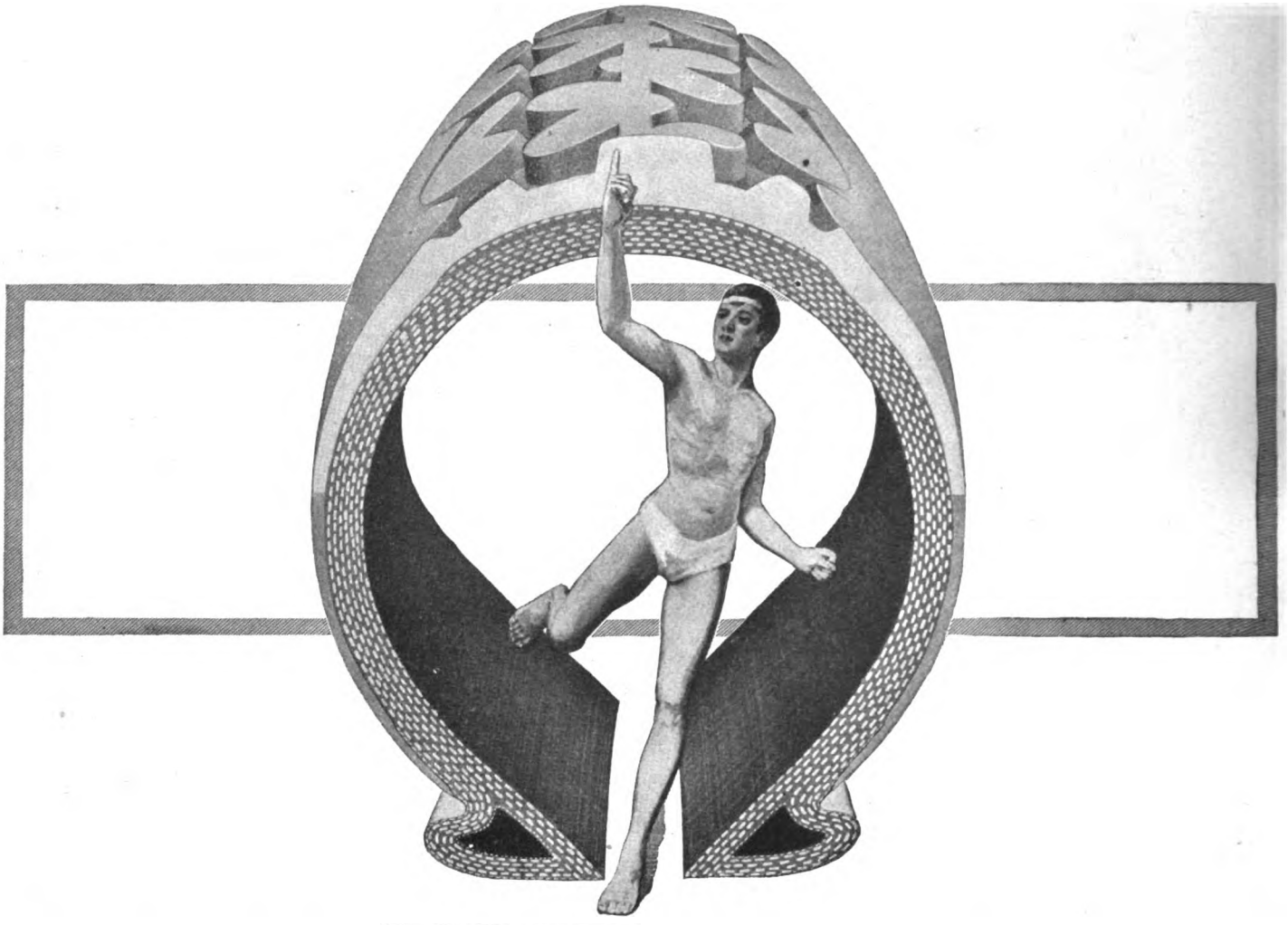
The KELLOGG is the pump most used as regular equipment on all their cars by reputable motor car manufacturers, and the pump endorsed and recommended by practically all the better motor car manufacturers for special equipment on their cars on which special provision for installation is made.

A good margin for the Dealer and Jobber is maintained.

We have an interesting and profitable proposition for everyone connected with the Automobile Industry. Send for details and supply of folders, dealer helps and displays.

Kellogg Mfg. Co.
Rochester, New York

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WHERE MOST WEAR COMES

—*Right There* the Marathon Concentrated Tread is heaped up high and thick, to ensure extra mileage and protection against punctures, blow-outs and other injuries.

The thickness of this husky tread, and the 100% efficiency of its Angle non-skid design, are possible in "Marathon" Tires because they have the bodily stamina to successfully withstand *excessive strains.*

ATTENTION DEALERS!

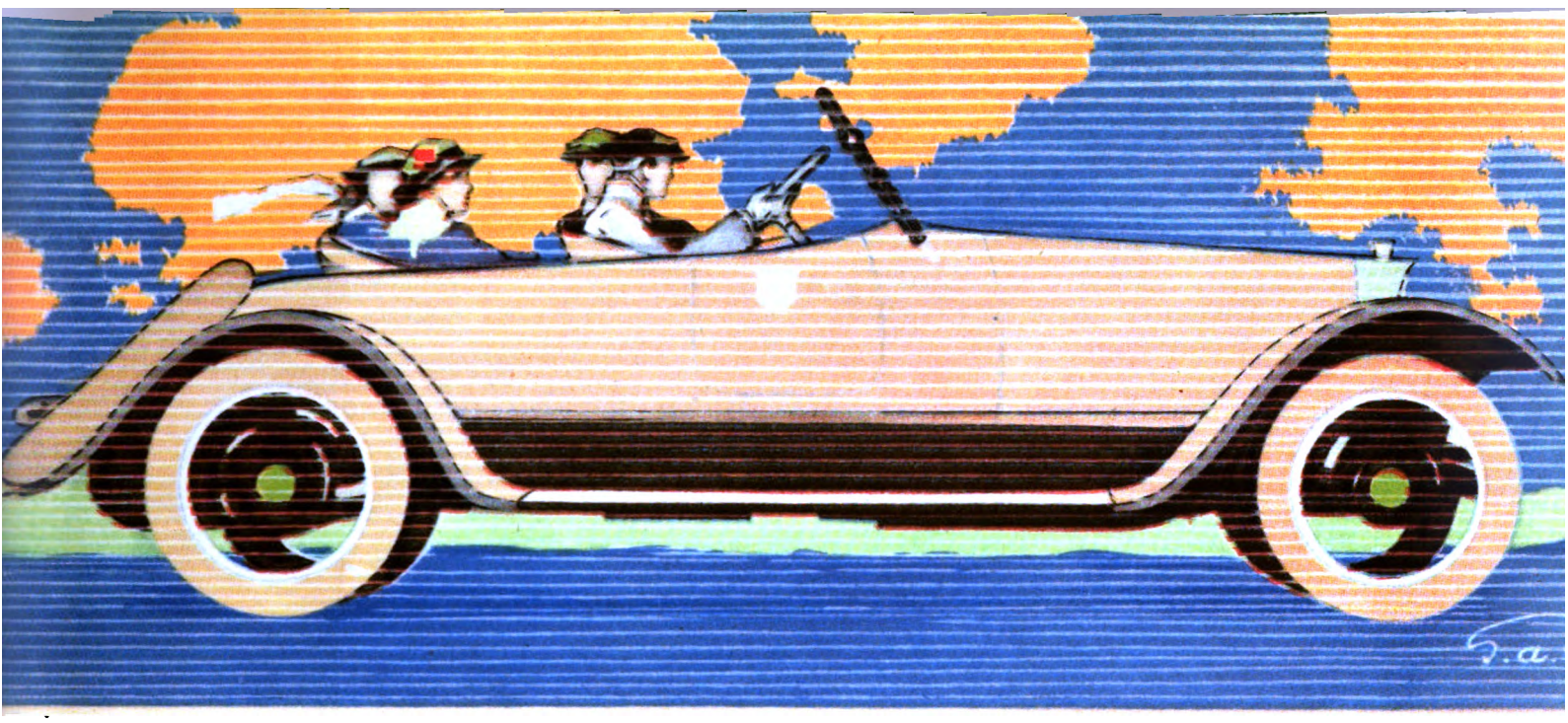
Get away from the wide-open competition on ordinary tires. **The Marathon Proposition** offers a tire of *exclusive* quality and selling features; *exclusive* territory and sales support. Investigate—write us at once.

THE MARATHON TIRE & RUBBER CO., CUYAHOGA FALLS, OHIO.

CANADIAN PLANT: ST. CATHARINES, ONTARIO.

SPEED MARATHON ENDURANCE

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Driving Through Air ~

What Makes the Owen Magnetic Run So Smoothly?

Men who have ridden in Owen Magnetic cars owned by their friends are constantly coming to us asking, "What makes this car FEEL so differently in the way it rides? What makes it FLOAT along the road as though it were being drawn forward by some force outside of itself?"

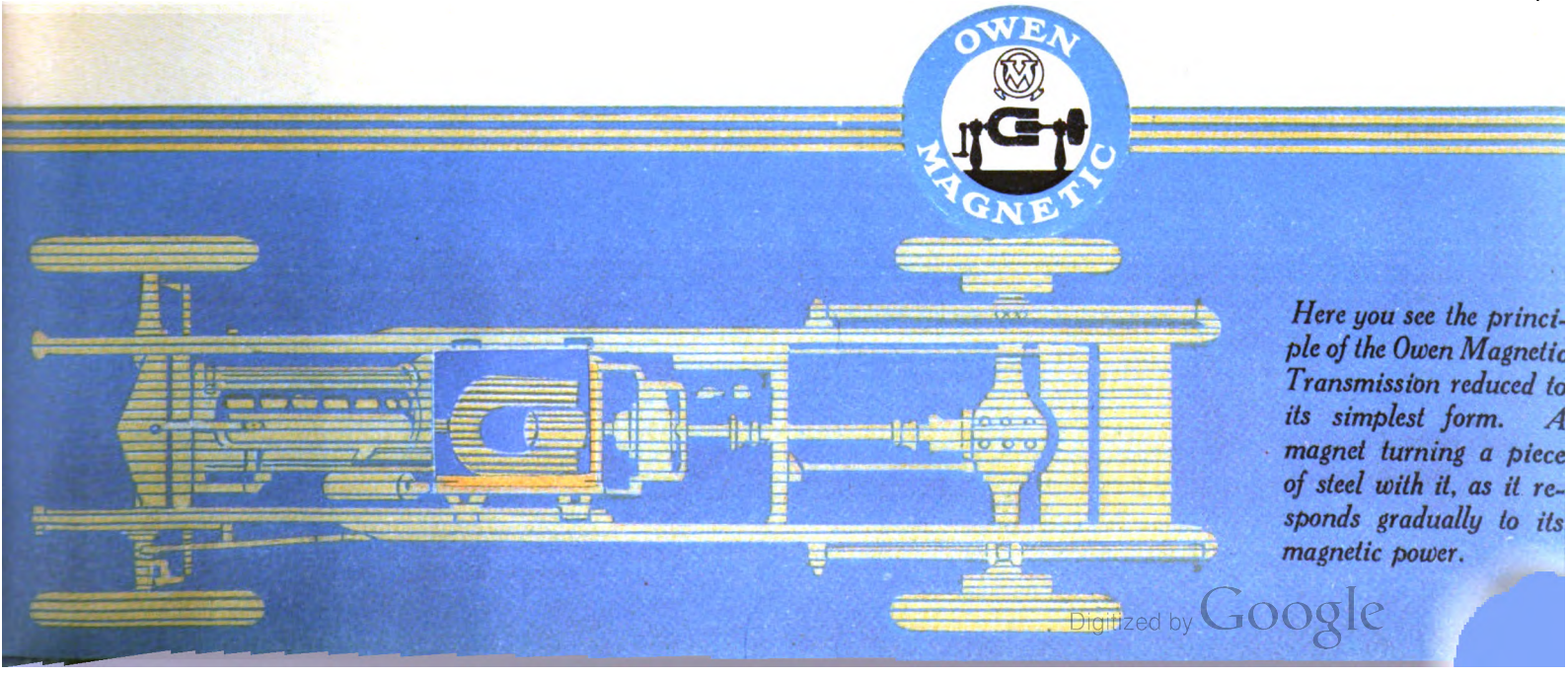
The answer is, because when you ride in an Owen Magnetic, you are driving by magnetism through air space.

Unique Comparisons

By referring to the drawings at the bottom of these pages you will see that we have an explanation of the operation of this transmission as it appealed to a youth of fifteen. Here is shown a magnet mounted on a pedestal that can be revolved by its hand crank. Between the ends of the magnet a piece of steel attached to a shaft is mounted on a similar pedestal.

The Cause of Smooth Action

Now if you turn the hand crank and so revolve the magnet you will find that the piece of steel also revolves, although there is an air space between the steel and the magnet. You will notice that even if you should start the hand crank

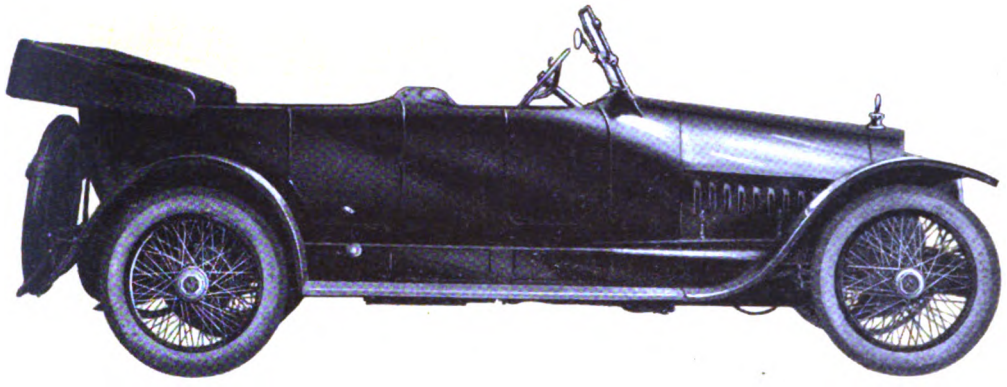


Here you see the principle of the Owen Magnetic Transmission reduced to its simplest form. A magnet turning a piece of steel with it, as it responds gradually to its magnetic power.

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DRIVING THROUGH AIR



with an abrupt jerk, the piece of steel would not start with a jerk, but will begin to move gradually, starting with an imperceptible gradation of movement—so gentle—so slight—that the eye scarcely can register it. That is because there is no rigid mechanical connection between the magnet and the steel—because the steel is revolved by an invisible, intangible magnetic force flowing across an air space.

The Mission of the Magnet

Now turn again to the illustration at the bottom of the page and you will find instead of a hand crank to revolve the magnet, we have a gasoline engine. Then note that the piece of steel is still between the ends of the magnet, but is now mounted on the drive shaft of the car. Here you will see that the engine revolves the magnet, the magnet revolves the steel, and of course revolves the drive shaft with it—and you will see also that when the magnet revolves, although it may start with a jerk, the piece of steel—and therefore the drive shaft—cannot start with a jerk, but will be gradually, softly drawn around with an imperceptible motion by this elastic magnetic field acting across an air space. You will note that there cannot be a sudden jump in driving effort from engine to drive shaft, to rear wheels, to tires, as when the clutch is let in and a rigid connection made between power plant and rear wheels as in the ordinary type of car.

Owen Magnetic Means Car Longevity

There is just the gentle drawing forward, due to the magnetic force, acting across an air space, which starts the drive shaft revolving and in turn starts the car forward so smoothly that it is actually in motion before the passengers can feel the motion—and its speed accelerates with such a smooth but perfect gradation, that there is no jerk, no jar, to mar its exquisite softness of riding—no harsh impact of power impulse to wear out differentials, axles, their bearings, and also the tires.

Coasting Qualities

Only when the engine is running faster than the propeller shaft is driving effort applied to the wheels. With the throttle closed the engine slows down to its idling speed and the car coasts perfectly free. The power is again applied by merely opening the throttle when the engine will increase its speed until it overtakes the propeller shaft and the magnetic lock again becomes effective.

Delightful Sensation — Safe

The coasting ability of the Owen Magnetic is not only a delightful sensation but is a wonderful aid in driving on slippery roads without the danger of skid-

Owen Magnetic Transmission permits the driver to run his car at any speed he desires, and control his clutch and brake as well, by simply moving a lever on the steering wheel. This gives an entirely new form of speed control, independent of the spark and throttle.

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DRIVING THROUGH AIR

ding. Where there is a positive connection as in the ordinary type of car between engine and driving wheels, the engine upon closing the throttle acts as a brake on slippery roads—the change from driving effort to braking almost invariably means skidding.

In the Owen Magnetic car, closing the throttle does not produce a braking effect—it allows the car to coast perfectly free without driving effort or braking at the wheels. Because of this the danger of skidding on slippery pavements is very much reduced and the car can be driven with greater confidence and a greater sense of security than is true of the ordinary type of car.

Electric Brake

In the neutral position the motor is connected to act as an electric brake—here it becomes a generator, taking power to drive it and so braking the car. It will hold the car on any mountainous grade without wear of any parts. It cannot hold the wheels, thereby practically eliminating skidding. The electric brake holds the car down to an absolutely safe speed on the worst hills. The electric brake is an addition to the regular foot and emergency brakes.

Owen Magnetic Transmission Eliminates

The friction clutch, clutch pedal, transmission gears, fly wheel, separate starting and lighting systems and their clutches, gears, chains, connections and automatic devices are eliminated because the Owen Magnetic system does the work of all.

What It Does for the Engine

It cleans up the power plant, makes it more accessible. Makes all of its parts, such as valves, valve springs, carburetor, magneto, water pump, hose connection, tire pump and steering gear case most accessible.

In the Owen Magnetic Is Offered

ease of control, elasticity of power, constant torque, smooth riding at a thousand speeds—qualities which other manufacturers have sought in vain by multiplying cylinders.

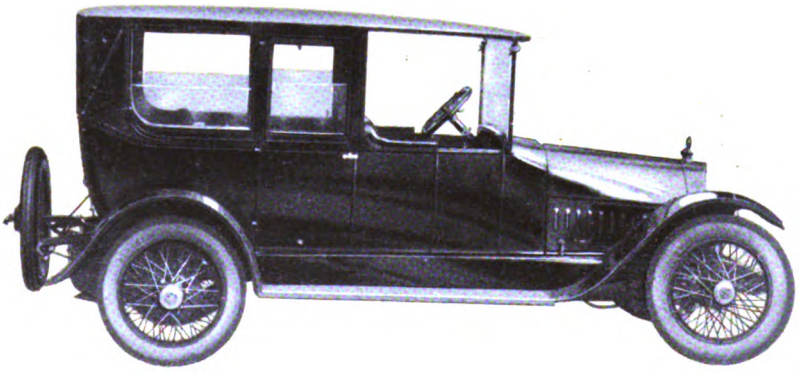
Unparalleled coach work, of the design and quality individual to only the highest priced foreign cars, characterizes the Owen Magnetic.

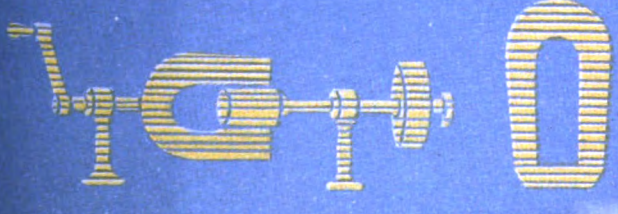
The Wonderful Control

The different controls of a motor car are accomplished on the Owen Magnetic by one small finger lever on the top of the steering wheel. This moves a drum controller to different positions and there can be no interference between any of these positions. You start, stop, increase, diminish or float along at any speed. No jerk nor jars like other cars. Only the smoothest riding action.

Complications Eliminated

There are no automatic cut-outs, regulators or roller ratchets, no chain or gear drives for any of the parts. Simply two ample sized dynamo machines direct connected and a drum controller, and require practically no





With an ordinary horseshoe magnet mounted as shown, anyone can prove for himself that a wheel with its shaft head placed within the arms of the magnet will turn with the magnet without any actual contact.

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attention or adjustment. These replace the separate starting and lighting systems with their complicated means of driving and regulation—the friction clutch and its actuating mechanism—and the fly wheel.

Simple and Clean

The system is as simple and clean as it is possible to imagine. It accomplishes more desirable things than have ever before been accomplished with a motor car and with an infinitely less number of parts. Outside the simplicity of the system and the fact that it displaces forever the most complicated and objectionable parts of the prevailing type of motor car, there are many features that appeal to those that drive and ride in an Owen Magnetic car.

Action as Smooth as that from an Electric Motor

All power impulses of the gas engine are eliminated—the turning effort impressed upon the propeller shaft is exactly as uniform and smooth as that from an electric motor. No shocks nor jars can be transmitted through this absolutely elastic means of transmitting power.

Power Never Disconnected

From a standing start to maximum speed through all the range of power required from level road to the worst hill, the power between the engine and the propeller shaft is never disconnected, as is the case where clutch is thrown out, a gear change made and clutch engaged again. The car may be easily manipulated in traffic, on level roads, winding irregular grades, through the operation of the small finger lever which calls forth all the power of the engine for an instant or as long as is necessary.

It Performs Surprisingly

The car may be held on a grade by its engine power, the clutch generator slipping and holding with the aid of the electric motor ready to at once go forward upon opening the throttle. By closing the throttle slightly the car will move backward slowly and then at the will of the driver be stopped—then sent forward up to the maximum speed the grade will allow and all without disconnecting the power of the engine from the driving shaft.

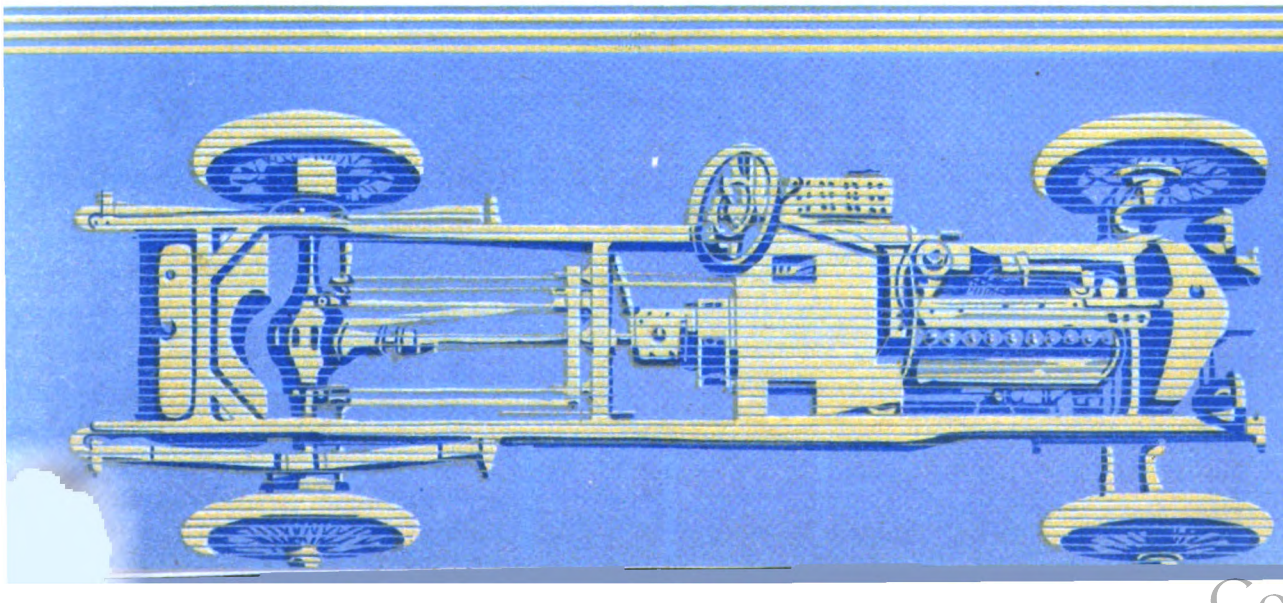
Owen Magnetic Builders

The electric apparatus in the Owen Magnetic car is built by the General Electric Company, which concern has acquired a large interest in the patents covering this transmission. The combination of the General Electric Co. with The Baker R & L Company, manufacturers of chassis and body, whose history in building fine coaches for over sixty years is synonymous with quality, guarantees to the owner a product of the highest possible quality.

BAKER R & L COMPANY CLEVELAND, OHIO

Manufacturers of OWEN MAGNETIC MOTOR CARS

Salesrooms: *New York* *Boston* *Philadelphia* *Chicago* *San Francisco*



In the actual Owen Transmission we use an electro-magnetic field which can be absolutely controlled from the steering wheel.

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BOURNE

BOURNE BMC TRUCKS

"The Most Advanced Truck in America"

A TRUCK that's revolutionary in its method of power transmission, in its ease of driving and its economy of operation is here. It is the Bourne Magnetic Truck.

The Bourne is the first and only truck to discard the conventional transmission and adopt the revolutionary but far more effective Magnetic Transmission.

It is a truck that is perfectly controlled by electricity, one whose speed can be changed instantly without jerk or jar, one that has continuous flowing motion, that is far easier to drive than the conventional type, that is much more economical to operate than others of its capacity, that has no clutch to slip or gears to grind, and that gives electric starting and lighting without a separate system.

All of this is made possible by the incorporation of the Magnetic Transmission into a truck that was designed and built to do a certain service BETTER than it was ever done before.

There is nothing theoretical about the Bourne superiority—we have the facts and figures to prove it. In seven months one truck has traveled 13,000 miles without the slightest trouble. It has used less gas, done more work, required less oil, been saving in tires and far easier to drive. In comparative tests, conducted by non-interested parties, the Bourne showed its leadership in every trucking essential.

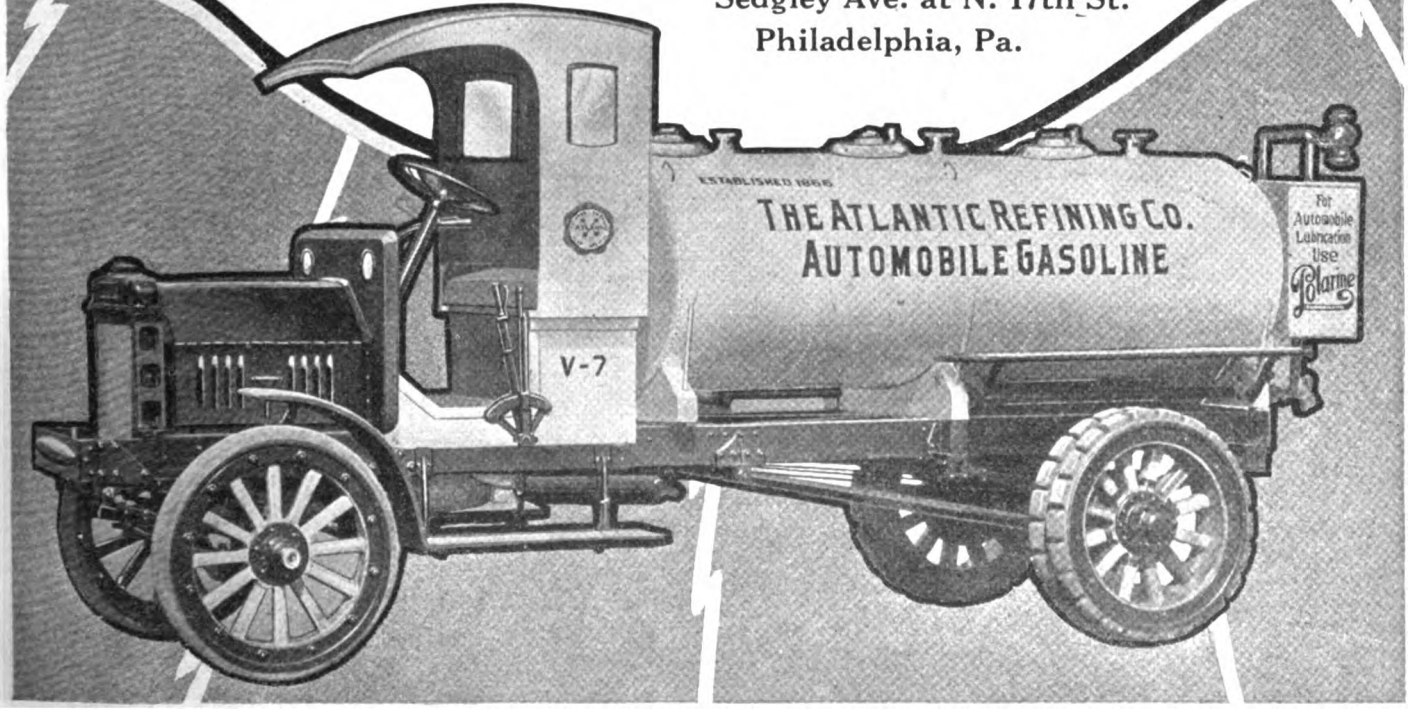
Other important factors in getting these results were the specially designed truck motor, built expressly for truck service; worm-drive axles; Mather springs, longer than usual and having more deflection, also having very big spring clips, the springs riding on trunnions, a patented feature; frames of our own design and make; specially designed universal joints, long radius rods, etc.

This truck is now on the market. The producing company is strong financially, and deliveries can be made as required. Applications for agencies will be considered only from well-established, responsible dealers.

2-Ton $3150 **3½-Ton $3850**

Bourne Magnetic Truck Company

Sedgley Ave. at N. 17th St.
Philadelphia, Pa.



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Converts Your Ford Car into a Guaranteed Powerful Tractor





THE biggest single achievement ever made in motor car conversions—an attachment that has created a new industry—the greatest commercial development in automobile history. The Staude Mak-a-Tractor—that converts a Ford into a guaranteed, powerful tractor, leaves touring car ready for either tractor use or use as a touring car with only 20 minutes required for change.

The Triumph of a Mechanical Genius

For years the name of E. G. Staude has stood for the best in mechanical construction.

Now his inventive genius is solving problems of the farmer.

The Staude Mak-a-Tractor is the result—the most powerful farm tractor for its weight ever built—the most efficient, economical, heavy duty workman in the world.

The sturdy, time-tried Ford furnishes the power.

You are the man to profit from this new industry.

Staude Mak-a-Tractor

Staude Ford Radiator (Extra Large)

We furnish special Staude Ford Radiator—cellular type—six times as efficient as standard Ford Radiator. This Staude high efficiency, extra capacity Radiator is necessary to safety of operation. The best Ford radiator ever built. A guarantee of perfect cooling for tractor and touring car. 1917 Fords require individual radiator equipment—(special models.)

Special force feed oiler—pumping oil direct to the motor bearings—guarantees perfect lubrication.

Chassis Unchanged

Staude Mak-a-Tractor simply clamps onto car with four bolts. No holes to bore. Remove rear wheels and fender—clamp on attachment. Replace Ford wheels with roller driving pinions—integral with brake drum. Change back to touring car in 20 minutes.

Real Quality Construction

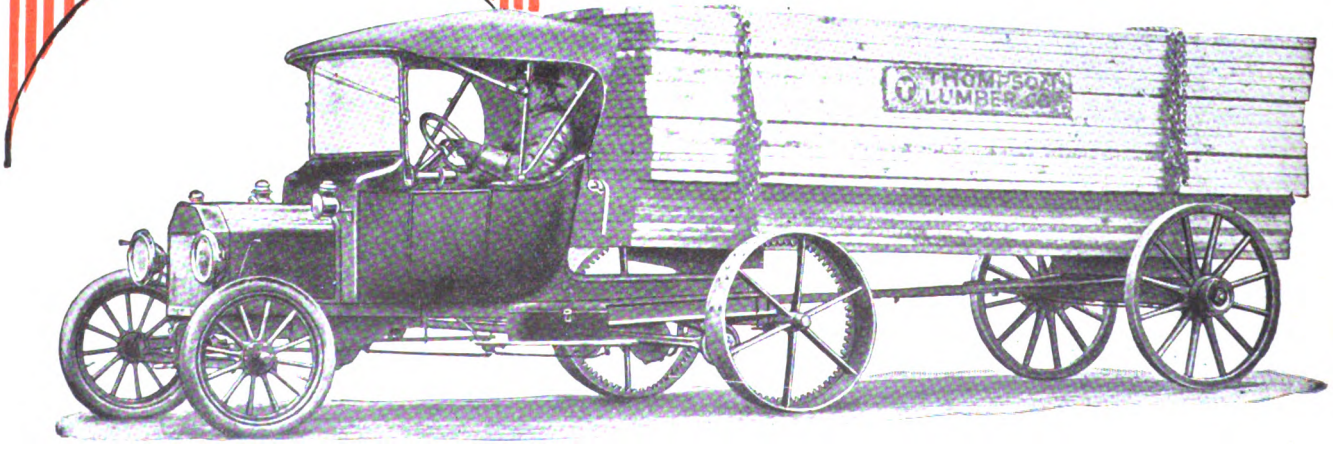
Absolutely the best material and workmanship. 38-inch Tractor wheels cast of one piece of semi-steel. The gear that meshes with driving pinion is arranged to insure accurate meshing. Staude rear axle carries all the weight. Ford rear axle merely drives. Note that driving pinions *push down* on tractor wheels. Special Staude concave creepers for soft soil and sand eliminate power losses—cut into soil—reduce working load.

2½ to 5 Miles an Hour

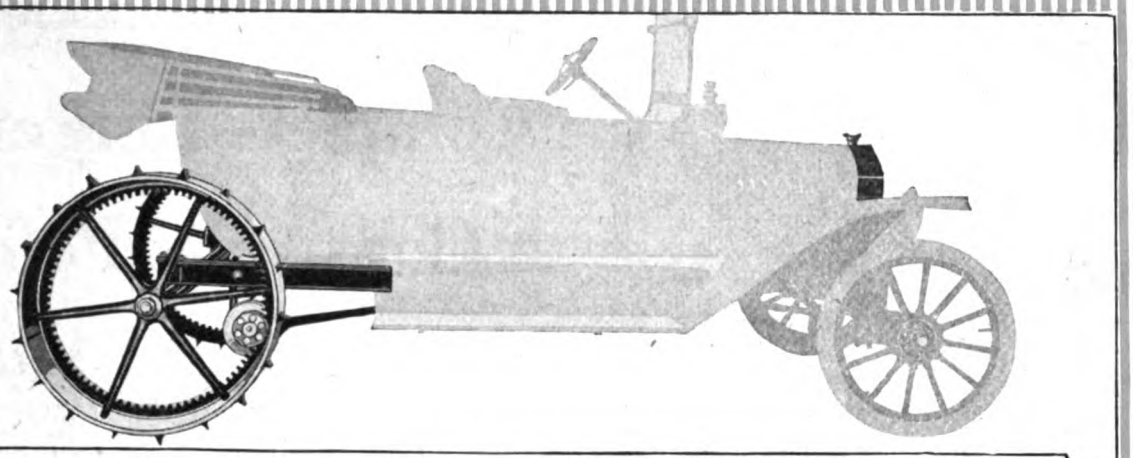
Starts and runs on high all the time. Speed 2½ miles for plowing—5 miles an hour for hauling heavy vehicles. Motor speed never exceeds 1,000 R. P. M.—the safe, efficient speed for the motor.

A greater number of rollers in the special pinion furnished with the fifth wheel attachment used for hauling heavy loads, gives the proper gear reduction necessary for increased speed.

Special fifth-wheel attachment furnished at slight additional cost.

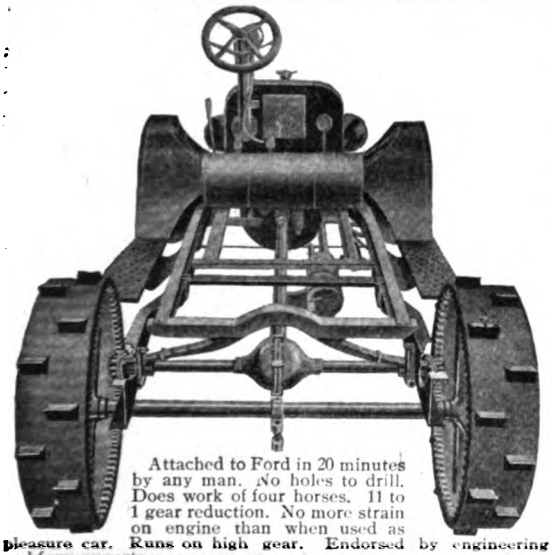


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SPECIFICATIONS

SPEED—Plows 2½ miles per hour; hauls 5 miles per hour.
WHEEL—Traction type 38" in diameter, 8½" face.
BRAKE—Transmission and emergency brake.
FRAME—4" channel rolled steel.
AXLE—2" cold rolled steel with roller bearings.
RADIATOR—A Staude Ford Radiator has six times cooling efficiency of present radiator.
OILER—Patented sight feed oiling system.
CREEPERS or Sand Hooks—included for use in soft or sandy ground.



Attached to Ford in 20 minutes by any man. No holes to drill. Does work of four horses. 11 to 1 gear reduction. No more strain on engine than when used as pleasure car. Runs on high gear. Endorsed by engineering and farm experts.

Most Sensational Money Maker Ever Offered Dealers

YOU know the sensational successes made by live dealers handling attachments. The Staude Mak-a-Tractor has five uses to every one of any other attachment. Prospective users waiting to give you orders. We give you the most astounding discounts ever offered. Every sale a big profit.

Tremendous Sales Certain

20,000 Staude Mak-a-Tractors will be built this year. 2,000 dealers in the next three months. Competition for deliveries sure to be tremendous. Orders all ready for you. It will be a case of *over-sold* from the start. Low selling cost—high net profits—no selling efforts—instantaneous turn-overs.

Three Profits on One Sale

Staude Mak-aTractor gives you immediate outlet for used Fords at good prices. If Ford dealer, you'll get three profits on each sale.
Profit on Staude Mak-a-Tractor. Profit on used Ford. Profit on new Ford.

Where is there an equal opportunity?

$9,000,000,000 in Real Money

Farm owners are richest class of buyers in the world. $9,000,000,000 for farm products goes to them. They spend huge amounts for farm machinery.

This makes tremendous sales opportunity for Staude Mak-a-Tractor with a fifth wheel attachment. Does work of four horses—hauling heavy vehicles—coal, ice, dumping wagons, etc. Works faster than horses—cost nothing when not working.

Big Backing for You

We will positively make big sales for you in your own territory by our advertising and merchandising sales help. We are running a gigantic campaign of national advertising in the big papers. We are offering a liberal co-operation in developing sales in your local territory, doing even bigger things than those which have already established the attachment field as the best advertised in the automobile industry—direct mailing—follow-ups—your individual prospects.

Send This Coupon

Delay may cost you the most valuable dealership you could possibly take on. Wire today for territory—it will give you first consideration—then write.

References—Any bank in St. Paul or Minneapolis

E. G. Staude Mfg. Co.

2654 West University Ave., St. Paul, Minn.



E. G. Staude Mfg. Co., 2654 West University Ave. St. Paul, Minn.

I am interested in the Staude Mak-a-Tractor. If this territory is still open, send Staude catalog, particulars of proposition to dealers and information about your big advertising campaign.

Name.....
Street Number.....
City.....
State.....

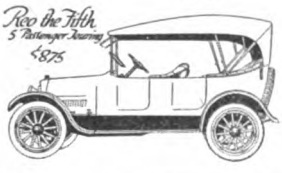
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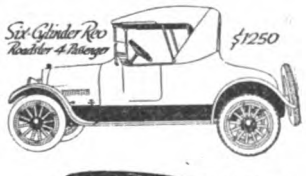
A Complete Line and —a Consistent Policy

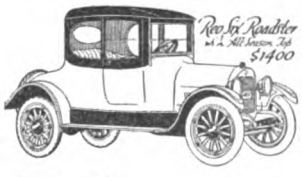


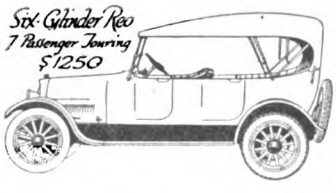












CONSIDERED FROM THE dealer's standpoint, the Reo proposition is ideal.

THE SUCCESS OF REO DEALERS is conclusive evidence of that.

THE VERY TENACITY with which distributors and dealers hang onto the Reo line shows that experience bears out what deduction would indicate.

EVERY DEALER WANTS as complete a line of pleasure cars as possible. But in most cases this can only be secured by handling several different makes of cars, each representing a different—and frequently a contradictory—policy.

YOU HAVE TO DEAL with several sets of men whose ideas of business—of engineering—of manufacturing, and of selling—differ radically.

OR, IF YOU DO get a line of pleasure cars that covers different price classes, you find yourself talking one type of motor or principle in design to one customer, another to the next—and still another to the third!

YOU ARE IN THE POSITION of a preacher who tries to expound three doctrines—but can't segregate his audiences! What he tells one, all hear.

RESULT: HE "SELLS" NONE of them—they go to another church where the man can be consistent even if not sincere, in his adherence to one brand of theology.

THEN AGAIN: Nine times out of ten, when a concern makes several models you find that one model is always pulling—another dragging.

DOES THAT SOUND FAMILIAR?—No need to elucidate further to experienced automobile merchants on that point!

AND STILL AGAIN—in those rare cases where a maker does produce several models of pleasure cars that do not conflict—still you have to go to another maker to get a line of motor trucks.

AND MOTOR TRUCKS now are considered by all live dealers, a necessary part of a complete line.

THIS REO LINE COMPRISES motor trucks as well as pleasure cars—ten models in all. And every model a known, recognized—conceded—leader in its class.

NO REO MODEL DRAGS—none has to be pulled along by a more popular one. All Reos enjoy a chronic overdemand.

THE DEALER WHO HANDLES the Reos has, in reality, three complete lines—two of pleasure cars, each made in four models; and two motor truck lines, that, working separately or in unison, perform fully 80 per cent of all trucking service.

HE CAN GO OUT AND COMPETE with the best in these several lines—and feel he has the best made in all of them.

THIS LINE IS UNIQUE in that all models—trucks and pleasure cars—are designed by the same men; made by the same men; sold by the same organization.

THE REO LINE REPRESENTS the same ideas in engineering—the same ideals in manufacturing and merchandising.

WHEN YOU TALK REO you talk the line—every word you say about one model applies to all.

EVEN THE SIX AND THE FOUR do not conflict. The one is ideal for its purpose—a seven-passenger touring car or Sedan, or for a luxurious big touring roadster—that's the Six.

THE REO FOUR APPEALS to the biggest and best class of buyers, those who want a real automobile—a big, commodious, honest-to-goodness five-passenger motor car or business roadster—at less than $1,000.

SO YOU SEE this line represents as none other does—none other, mind you—those factors every dealer desires in the line he handles.

AND ON TOP OF THAT it represents the highest ideals; the soundest policy; the best engineering, and the best quality throughout. That, every dealer knows.

WE SELDOM CHANGE, we Reo Folk. Never until we are convinced the present Reo representative never will measure up to the Reo standards. Or, as occasionally happens, to get one who will represent the full line instead of making it necessary for us to have two Reo men in the same territory.

IT'S A GOOD IDEA THOUGH to get, and to keep, in touch with the Sales Department. Things may be developing that you don't see on the surface, right in your own bailiwick.

AND YOU MIGHT SECURE the plum—the best paying, because the Best line of automobiles and motor trucks made by one concern—backed by the same guarantee.

Reo Motor Car Company

Lansing, Michigan

174-A



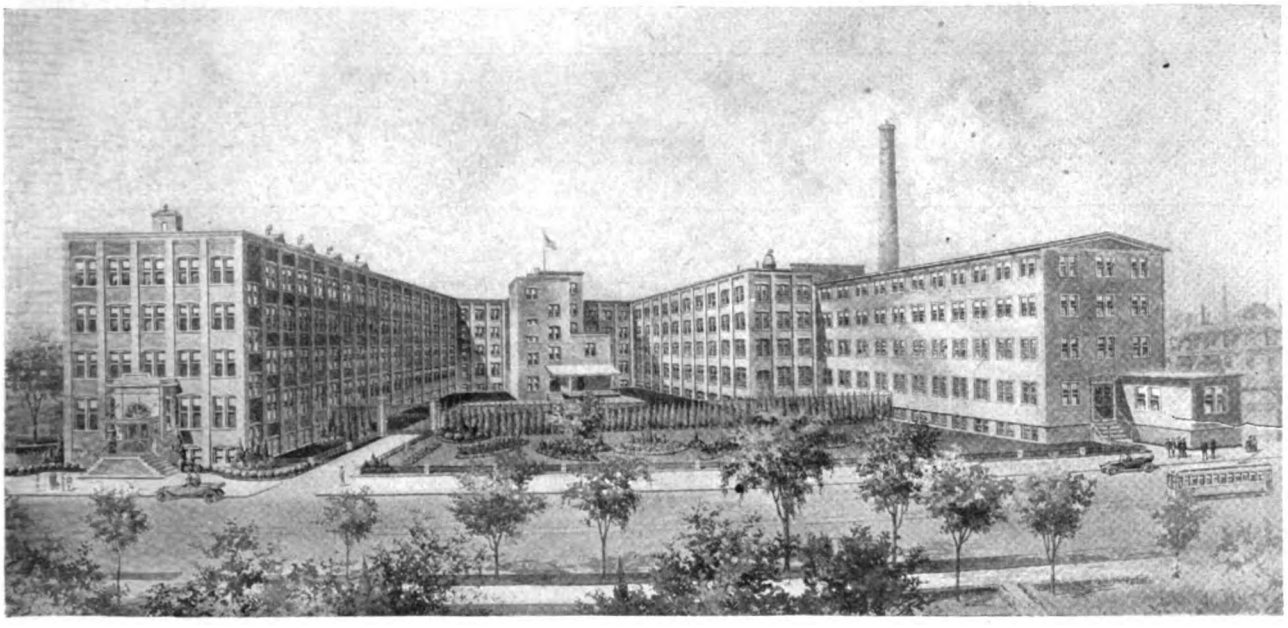




"THE GOLD STANDARD OF VALUES"

All Prices are f.o.b. Lansing, Michigan

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The recently completed plant of the Connecticut Telephone & Electric Company, Meriden, Conn.

THE LARGEST PRODUCERS OF IGNITER SYSTEMS AND AUTOMOBILE LIGHTING CONTROLS IN THE WORLD

CONNECTICUT TELEPHONE & ELECTRIC COMPANY

Meriden **Conn.**

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Sturdy and Sure



"We have had Garford Trucks ever since we acquired motor vehicles—and we will continue using them,"—says the H. C. Bohack Company of Brooklyn. Mr. Bohack has eight Garfords—three 5 ton, two 3 ton, one 2 ton and two 1 ton models.

FOR downright day after day dependability, for extraordinary fuel and oil economy, for the ability to perform the most gruelling labor, *steadily, smoothly* and *uncomplainingly* the Garford Motor Truck stands *away to the fore*—absolutely unapproached by anything else on wheels.

This ability to *do*,—this plugging, winning *persistence*,—this uncanny *economy*, has made the Garford name a world wide symbol of efficiency.

Garfords are successfully meeting hauling problems that few trucks would even attempt.

They are *making money* for owners in *all* parts of the world—under every conceivable condition of climate and highway.

And they are making money for dealers. We have room for a few more big calibre men in our selling organization. Address dept. 104 for complete information.

Garford Motor Trucks

The Garford Motor Truck Company, Lima, Ohio

Manufacturers of Motor Trucks of 1, 1½, 2, 3½, 5 and 6 ton capacity
4½, 7 and 10 ton Tractors
Distributors and Service Stations in all Large Cities

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HAYES WIRE WHEELS

are the embodiment of strength and grace. They are built by the Hayes Wheel Company, Jackson, Michigan, known the world over for its efficient organization and unequaled producing facilities. They will be observed at the New York and Chicago Shows as special or optional equipment on some of the most distinguished cars. When you order Wire wheels be sure and specify Hayes. Catalog on request. ¶ Exhibited at New York and Chicago.

CASTLE & KYTE

872 Woodward Ave., Detroit, Mich.

Exclusive Selling Agents

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Firestone

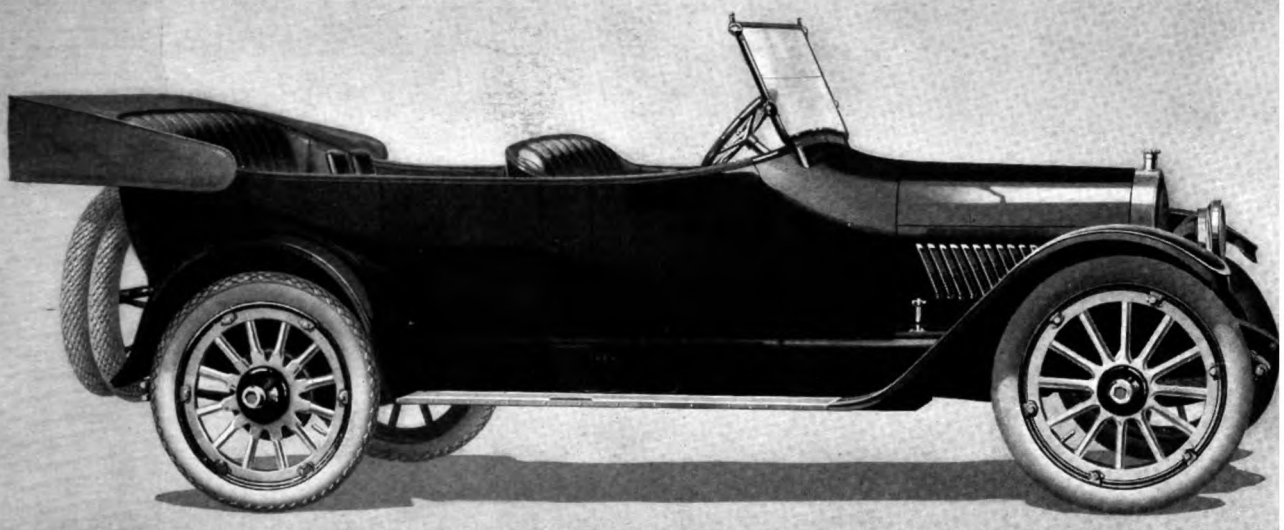


FIRESTONE TIRES have all the qualities of the thoroughbred: sure footing with instant response, stamina and speed. These qualities make your motor car of universal use, practical on all roads, in every season. They explain why Firestone Tires are unanimously given high rank as a valued public servant.

FIRESTONE TIRE AND RUBBER COMPANY
Akron, Ohio Branches and Dealers Everywhere

When writing advertisers please mention Motor World

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Seven Passenger Touring Car $1367 f. o. b. Lansing

Announcing Oldsmobile Nineteenth Year

THE NEW SERIES

THIS light weight eight-cylinder car combines all that one desires in a motor car in power acceleration—speed—ease of control—economy—and comfort. The steady flow of power generated by the eight-cylinder motor, together with counterbalanced crank shaft and light weight throughout, makes the New Series Oldsmobile a car of almost unbelievable flexibility.

In addition to the mechanical features that you can only appreciate by driving are the external refinements that spell luxury, comfort, and beauty.

The new lines of the car are graceful and pleasing. The upholstery is genuine long grain French leather in the new long tufting. The silver finished radiator adds a brilliant contrast to the highly polished hand varnished body.

In every sense the New Series Oldsmobile is a luxurious car.

This car will be instantly recognized as unusual value by every motorist in the land.

Even in advance of this announcement applications from dealers have been coming in rapidly.

We will consider some new dealers because the demand for this car requires a larger organization. Responsible dealers who will carry the New Series Oldsmobile as a leader will be added to our organization in some territories.

No matter what line a dealer is carrying, he should not fail to investigate our proposition.

We shall be glad to send particulars of our dealer arrangement.

OLDS MOTOR WORKS LANSING, MICHIGAN

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NEW SERIES

Oldsmobile

19TH YEAR

Specifications

Wheel Base—120 inches, with unusually ample body, due to short hood, with compact motor.

Motor—Eight cylinder, V-type, high speed motor with counter balanced crank shaft, $2\frac{7}{8}$ inches bore, $4\frac{3}{4}$ inches stroke. L-head with inclined valves. Cylinders four en-bloc, cast integrally with upper half of crank case and bolted together—patented feature. Three-point suspension. Motor develops over 50 horsepower brake test.

Lubrication—Force feed by gear pump direct to bearings. Pressure indicated by oil gauge on dash.

Electric System—Oldsmobile system in three units—starter, generator, and distributor, each unit independent.

Spark Advance—Automatic.

Caburetor—Automatic compensating type, minus springs, water jacketed.

Gasoline System—Vacuum feed type, gasoline tank in rear.

Transmission—Unit with motor, selective type, center control. Three speeds forward and reverse. Hardened steel gears, transmission shaft mounted on ball and roller bearings.

Gear Ratio—Touring cars $4\frac{1}{13}$ to 1; roadsters $4\frac{5}{13}$ to 1.

Clutch—Leather faced, cone type.

Drive—Hotchkiss type, through rear springs. Tubular drive shaft with extra large universal joints.

Rear Axle—Full floating.

Brakes—Service brakes, external contracting; emergency brakes, internal expanding. Brakes adjustable by thumb nut.

Springs—Front, semi-elliptic. Rear, three-quarter elliptic, underslung.

Upholstery—Extra quality long grain French leather, stuffed with small springs encased in linen sacks.

Dash—Circassian walnut, with silver finished instruments, mounted flush—oil pressure gauge, speedometer, eight-day clock, ammeter, lighting and ignition switches.

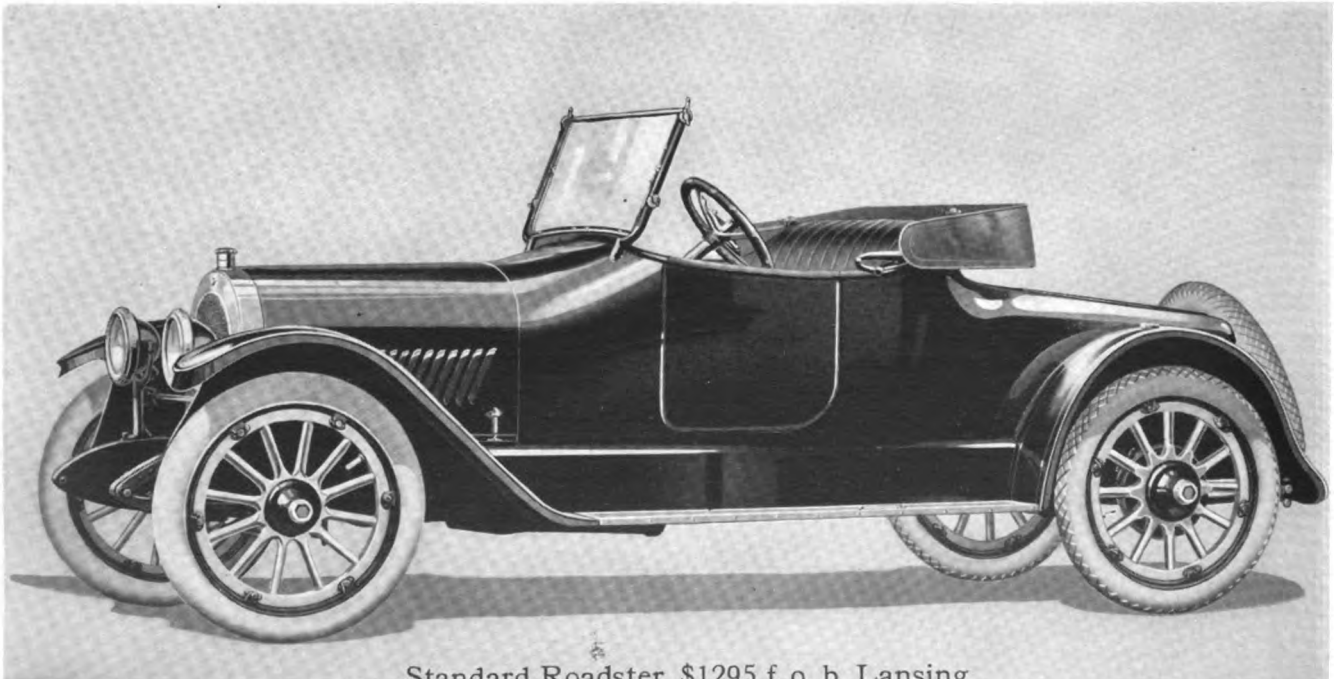
Lamps—Double bulb headlights. Tail light, dash light, tonneau light.

Tires—33 x 4 on all but 7-passenger which carries 34 x 4—nonskid on rear wheels.

The Oldsmobile line comprises

Seven Passenger Touring Car	Sedan
Five Passenger Touring Car	Cabriolet
Club Roadster	Standard Roadster

OLDS MOTOR WORKS ∴ LANSING, MICHIGAN



Standard Roadster $1295 f. o. b. Lansing

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No Watson Dealer Has to Ask What's Wrong With the Truck Business

There's an unusual certainty of sales and an unusual liberality of profits accruing to the Watson dealer.

There's the prestige of predominant exclusiveness in the big features of the

100% WATSON Tractortruck

There's the knowledge that the Watson Tractortruck will do absolutely everything any conventional truck will do and many things no truck ***can*** do—do them better, at lower cost per mile, with utmost surety, with longest fidelity, with greatest dispatch.

Watson Features

Turns in its own length without backing.
Undercut bottom dump.
Gravity — not power — does the dumping.
60% of load carried on steel tires.
Sub-frame carries weight of power plant, tank, and seat when truck is empty.
Utmost flexibility — various types of trailers can be used with same tractor.
Minimum gasoline consumption.
Lowest upkeep cost.
Greatest tire service.

There is the fact that there isn't a big trucking or hauling problem in the whole wide world that the Watson Tractortruck cannot definitely solve. Behind these claims of supremacy is the big, long-established reputation of the Watson Wagon Company. Behind the Watson Tractortruck is the full financial strength and manufacturing resources of over a quarter century of unparalleled trailer development.

Somebody in ***your*** territory is going to sell Watson Tractortrucks. Somebody is going to be a Watson Tractortruck dealer and not merely a half-successful hunter of truck sales. We've got a proposition covering ***big*** profits and ***big*** exclusive territory that offers a ***big*** opportunity for ***big*** dealers. The time to get in touch with it is ***the day before tomorrow.***

Also send for descriptive matter telling all about and picturing Watson Tractortrucks, together with special dealer Selling Plan.

WATSON WAGON CO., 40 W. Center Street Canastota, N. Y.

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DU PONT FABRIKOID

RAYNTITE

The Ideal One-Man Top Material

THE modern one-man top demands light weight. Rayntite single texture top material weighs about half as much as double texture material of equal waterproofness.

It is guaranteed one year against leakage, but built to last the life of the car.

Its strength is ample to stand the strains of service.

Why make your car top heavy, and the "one-man" top a joke, by using material twice as heavy as it needs to be?

Rayntite has been on the market and in active service on thousands of cars for nearly two years. We have yet to receive the first claim under our guarantee.

Now Made in Two Varieties

RAYNTITE No. 1 Single texture with Fabrikoid surface
RAYNTITE No. 2 Single texture with Fairfield Rubber surface

Each is guaranteed one year against leakage.

If the car you are considering is not topped with Rayntite find out whether you or your wife can really handle the one-man top.

Samples of either variety on request

Du Pont Fabrikoid Company, Wilmington, Delaware

Works at Newburgh, N. Y., and Fairfield, Conn.
Canadian Sales Office and Factory, Toronto

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The Survival of the Fittest

Tempered Rubber **Quakers**, the only tires to stand the gruelling test on mountain roads covered with sharp granite and quartz boulders.

McGowan Bros.,
Spokane, Wash.

Dear Sirs:

During the month of September, 1916, Mr. Nichols and myself made a trip into Elk City, Idaho, ours being the first machine that ever successfully accomplished this trip. The first twenty-five miles we climbed to an elevation of 6700 feet, or an altitude of about a mile and a quarter. The road over which we traveled was covered with sharp granite and quarts boulders. We were never out of the intermediate gear for a distance of forty-seven miles and most of this was done on low.

Our car was equipped with three different brands of tires, two being brand new and two that had run less than a thousand miles. In addition to this we carried two extra tires. In climbing over the steep ridges, sometimes at a grade of 25%, we completely stripped the rubber off the rear tires, with the exception of your QUAKER which stood the trip both ways without any apparent wear and without change. On the opposite rear wheel we changed tires three times and wore them out completely. Your QUAKER has run since then 1800 miles and is still in good condition. We are today ordering three additional QUAKERS to fully equip the car. You sure have converted us.

Yours truly,
(Signed) NICHOLS & BEVAN,
T. D. BEVAN.

The indications are that the 1917 demand for Quakers will far exceed the supply. If your territory is open, write at once for our proposition. Address Dept. T-1.

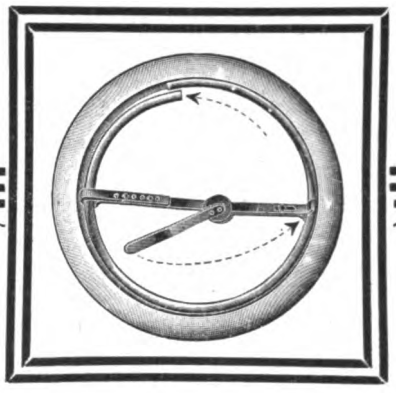
QUAKER CITY RUBBER CO.

FACTORIES PHILADELPHIA

CHICAGO, 182 W. Lake Street **PITTSBURGH, 211 Wood Street** **NEW YORK, 207 Fulton Street**



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THE EUREKA RIM COMPRESSOR

Will Remove or Replace tires in 12 seconds

Dealers and Jobbers who are interested in rim compressors will find it worth their while to see the actual demonstration of the performance of the EUREKA RIM COMPRESSOR at the New York Automobile Show. You will find us in Space D-84, 4th Floor, Grand Central Palace.

Check up the following points in favor of the EUREKA:

It permits you to remove or replace your tires in a few seconds.

It *holds* your rim in a collapsed position. It cannot slip while you are removing the tire. The lever locks when it is in alignment.

There are no clamps to fasten or screws to adjust in the EUREKA. The specially devised ends are applied directly without adjustment both in removing and replacing tires.

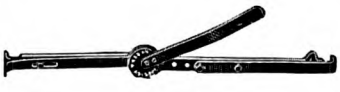
The long lever and eccentric joint permits a tremendous leverage, which makes compressing the rim quick and easy.

There is absolutely no danger of damaging your rims or casing when using the EUREKA, nor can you pinch your inner tubes in the process.

It draws your rim just so far and cannot spring it out of shape.

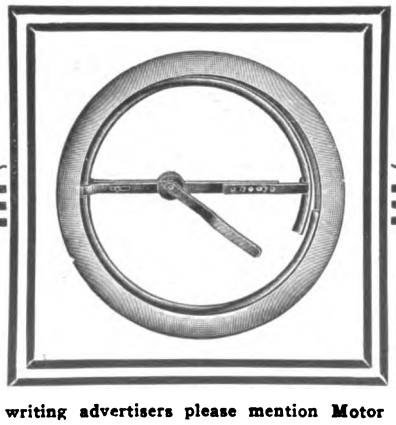
You will find in the EUREKA the best materials and dependable workmanship.

The EUREKA RIM COMPRESSOR is for use on demountable rims of the transverse split type, such as the Standweld, Baker (new style), Kelsey, Firestone, Universal and others.



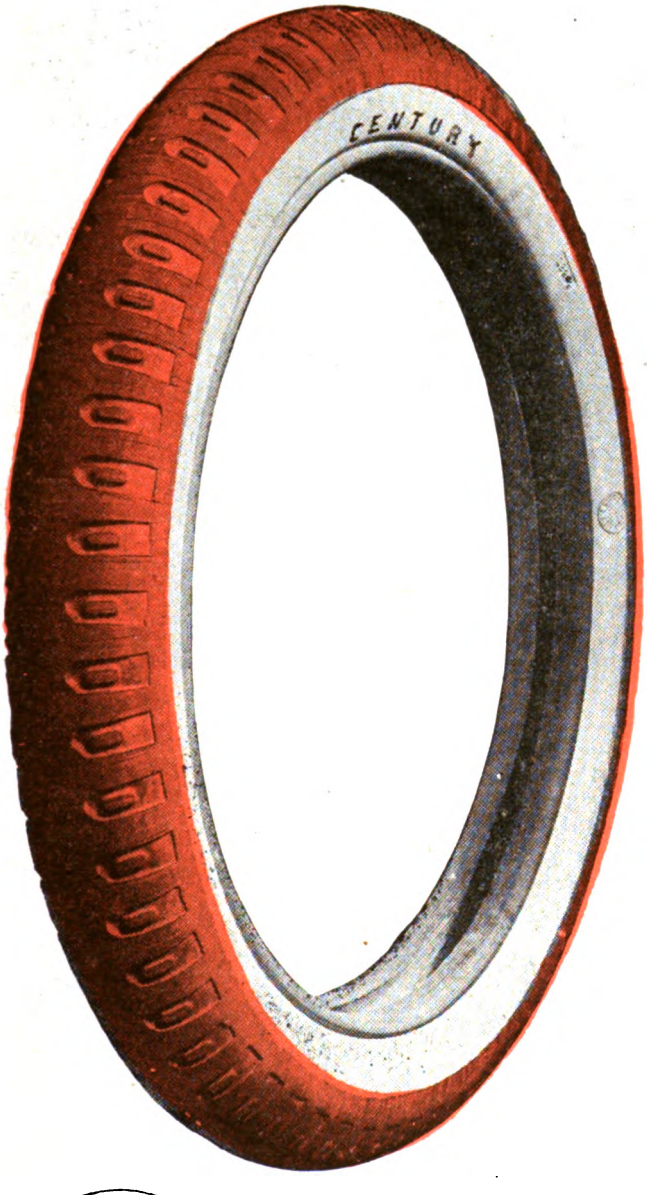
Price $3 GUARANTEED

The Eureka Rim Compressor, Inc., Addison, N. J.



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CENTURY
6000-Mile
TIRES



RUBBER TRADE RIMCO MARK PRODUCTS

Rubber Insulated Metals Corporation
PLAINFIELD
NEW JERSEY

CENTURY TIRES are hand made. The finest fabric obtainable goes into them, unstrained by machine stretching.

Careful hand building is costly, but it guarantees a smooth, even carcass, and eliminates many troubles inherent to machine made tires, where quantity production is the first requisite.

In the selection of materials, as well as in every step of the manufacturing process, the production of excellent tires is our only aim.

We offer Century Tires on a quality basis only. Their price is to be considered only in view of the long and satisfactory service they give.

Guaranteed for 6000 miles, Non-Skid, Ford sizes 7500 miles; Smooth tread, 5000 miles; Ford sizes, 6000 miles. Built to travel much farther in any but the most unusual circumstances, these tires are the natural selection of experienced motorists.

Some exclusive territory for a few agencies is still available. See our representatives at the National Auto Shows.

CENTURY TIRES will be on exhibit at the New York Show, (Grand Central Palace, Booth D 118, 4th Floor) January 6-13; and at Chicago (Coliseum Annex, Space 213) January 27—February 3.

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Your Customer's Opinion

Mr. Tire Dealer:

Every article you sell works either for or against you. It reflects on your customer's mind the quality of everything you have to sell, both of goods and service. It moulds his opinion and determines the future of your business.

The sale is the beginning, not the end of the transaction, so the best is by far the most economical for you to handle.

If you believe this and are building your future on the solid rock of Public Confidence you need Republic Tires working for you.

REPUBLIC TIRES

AND REPUBLIC BLACK LINE RED INNER TUBES

reflect this policy. Never for one minute has our faith in Public Opinion wavered, and never have we let anything influence us to cheapen our product. We can't afford to forfeit the good will that Republic quality has built.

This constant aim is responsible for the discovery of the Prodium Process, the exclusive Republic discovery in tire manufacture that has lifted Republic Tires to the place they occupy today—that gives them the wonderful toughness, resiliency and road defiance which not only sells them but keeps them sold.

We solicit correspondence with responsible dealers; live business men who apply the same principles to business that we do to manufacture. Write today for proposition.

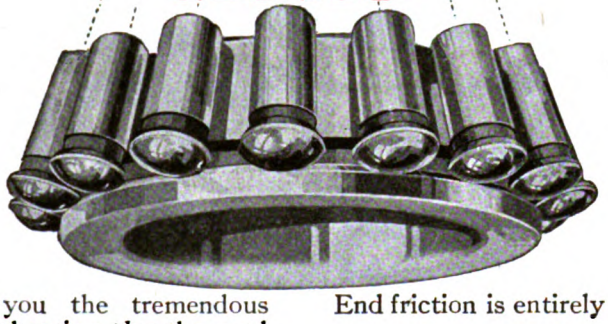
THE REPUBLIC RUBBER COMPANY, YOUNGSTOWN, OHIO

Branches and Agents in all Principal Cities

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BOCK

Everything Rolls



Bock Bearings give you the tremendous strength of the roller bearing *plus* the good features of the ball bearing.

Consequently the Bock will carry *much heavier loads*—and will *outwear* any other roller bearing.

The bearing end of each Bock roller is a segment of a perfect sphere. So where other bearings merely slide and scrape, the Bock *rolls*.

End friction is entirely eliminated.

Everything rolls.

Engineers everywhere have enthusiastically shown their approval of the exclusive Bock features—and as a result Bock Bearings are replacing all other types of motor car bearings just as rapidly as we can supply them in sufficient quantities.

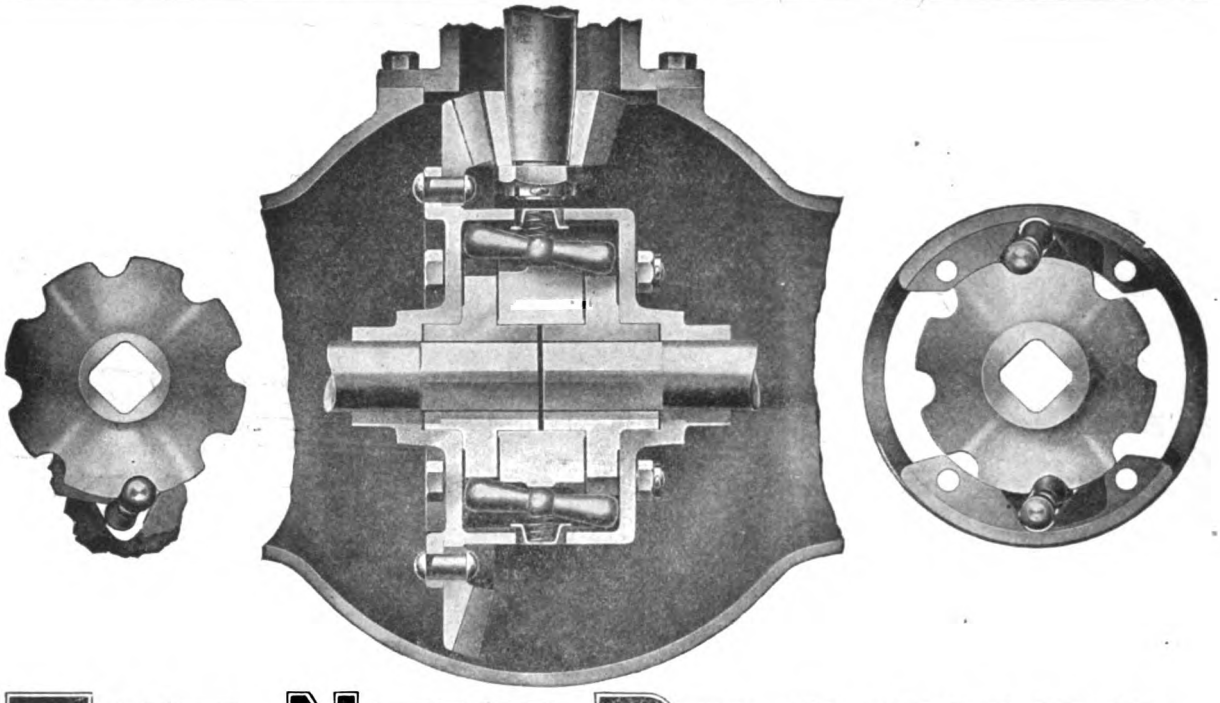
The Bock Bearing Company, Toledo, Ohio



Ball Ends

The only roller bearing with frictionless rolling end contact

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THE NEW PROCESS DIFFERENTIAL

compensates perfectly in turning, and on straightaway locks to drive both rear wheels **positively** and **equally** on a **practically undivided axle.**

This equalized driving power, impossible with an ordinary differential, keeps the car from swerving at high speed or on slippery road, keeps one wheel from spinning while the other is embedded in sand, mud or snow, and therefore assures safe and sure passage on roads where a gear-differential-equipped car would skid or stall.

Obviously, then, the equalizing power distribution also makes steering easier, makes the car hold to the road better, protects tires from disastrous grinding and tearing, and by holding down the wheel travel to the fewest revolutions for given distance, reduces power waste and steadies engine speed.

Automobile and Axle Builders:

These strong selling arguments commend New-Process-Differential-equipped cars to favorable consideration and the motoring public will quickly grasp the possibilities from this improved construction.

You can equip with New Process Differential without changing your present axle housing or bearing layout, and you can be sure that the few simple strong parts will last better than the corresponding elements of a geared differential.

The cost is no more than for the less efficient type, and we stand ready to offer every reasonable assurance as to efficiency and long life.

Our twenty years of successful manufacturing, $1,500,000 invested in plants and equipment, and well established reputation for progressiveness and fair dealing, further make this device worthy of careful consideration.

Blue prints, costs, etc., submitted on application.

Licensed under patents of the
Gearless Differential Company of Detroit, Mich.

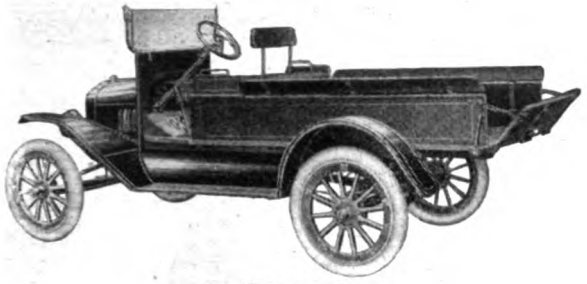
N.P.R.H. REG. U.S. PAT. OFF.

NEW PROCESS GEAR CORPORATION

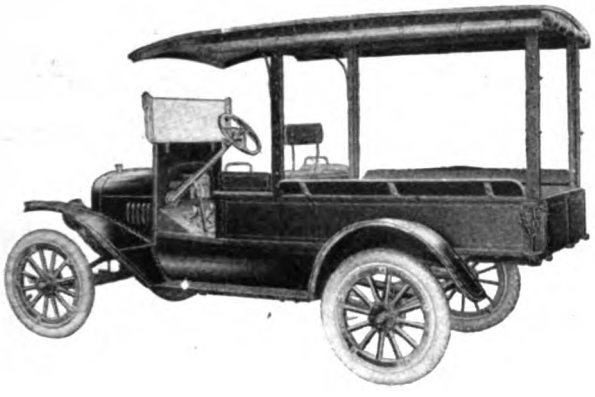
SYRACUSE, N.Y.

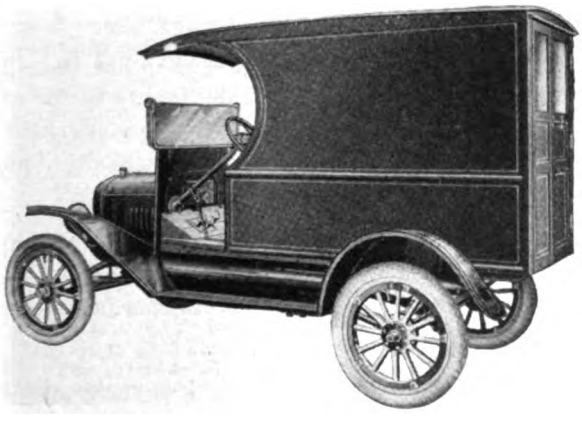
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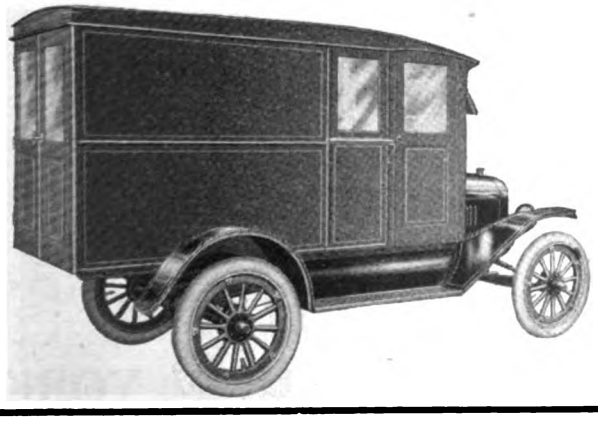
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HENNEY

Commercial Bodies for Ford Cars

A year ago we built a line of Commercial Bodies for Ford cars and marketed them through regular dealers. These bodies were made in our carriage factory at Freeport, where for over half a century we have built high grade vehicles, and every commercial body was carefully built to sustain the reputation of Henney quality. Dealers were quick to realize that the Henney line gave them an opportunity to build up a profitable and permanent business on commercial bodies, because every job sold gave the best of satisfaction and brought more orders.

The Remarkable Demand for Henney Commercial Bodies

has prompted us to offer a more comprehensive line for the coming year, with a body specially adapted for almost every business—the general merchant, dry goods merchant, hardware dealer, grocer, plumber, florist, farmer and dairyman. Every Henney Commercial Body has pleasing lines, is attractive in appearance and will give long and satisfactory service because it is quality built from start to finish.

We Are Able to Give the Best Service

because of our organization and system of distribution through branches in all parts of the country. Stocks of Henney Commercial Bodies are carried at the following points:

Kansas City, Mo.	**Atlanta, Ga.**
Omaha, Neb.	**Oklahoma City, Ol a.**
Minneapolis, Minn.	**Portland, Ore.**
Dallas, Tex.	**Bloomington, Ill.**
St. Louis, Mo.	**Columbus, O.**
Stockton, Calif.	**Poughkeepsie, N. Y.**
Los Angeles, Calif.	**Jackson, Mich.**
Salt Lake City, Utah	**Minot, N. D.**
Denver, Colo.	**Des Moines, Ia.**
	Moline, Ill.

Only a few of our line of Henney Commercial Bodies are shown herewith. A catalog describing the full line will be gladly sent on request.

Dealers: If you want a line of Commercial Bodies for Ford Cars that will enable you to outdistance competition, take on the Henney Line for 1917. Prices and quality are both right. We have a mighty interesting agency proposition and some territory still unassigned. A postal or telegram will bring you full information. Address factory or nearest branch.

HENNEY BUGGY

BRANCH OF MOLINE PLOW CO.
MOLINE, ILL.

HENNEY BUGGY,
Branch of Moline Plow Co.,
Moline, Ill. Dept. M

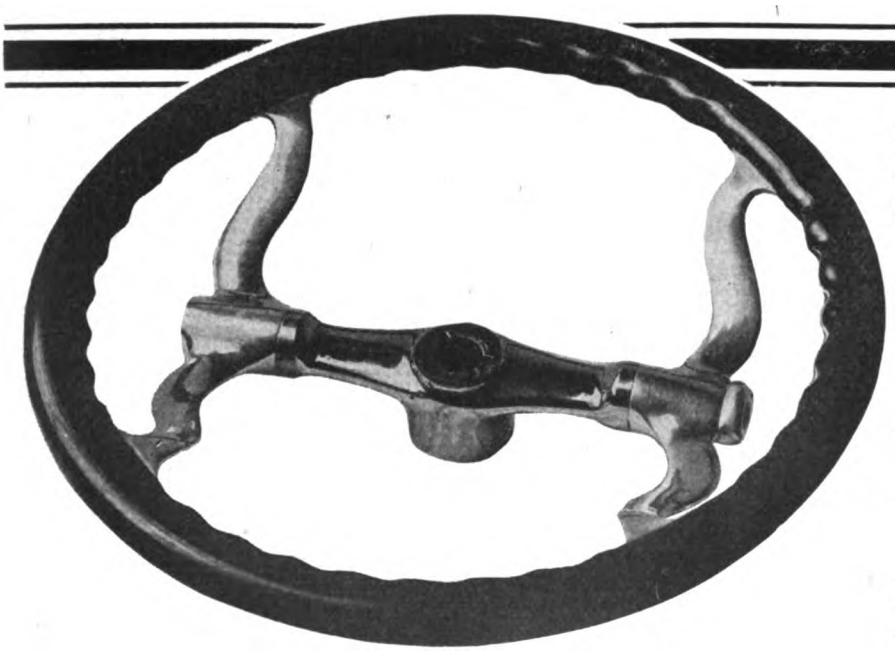
Kindly send me full information about the Henney Line of Commercial Bodies.

Name .....

Town..... State.....

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POVASCO STEERING WHEELS



Povasco Wheels for Comfort
Povasco Wheels for Appearance
Povasco Wheels for Economy

Povasco Wheels, in every model and size, represent all these things to car owners. That's why there's a big market for the sale of Povasco wheels.

The plain model made of either Bakelite or Condensite adds to the beauty of the car—for it not only is beautiful but it remains beautiful always and is practically indestructible.

The other models with their tilting and heating arrangements offer real comfort and utility combined with everlasting beauty and durability.

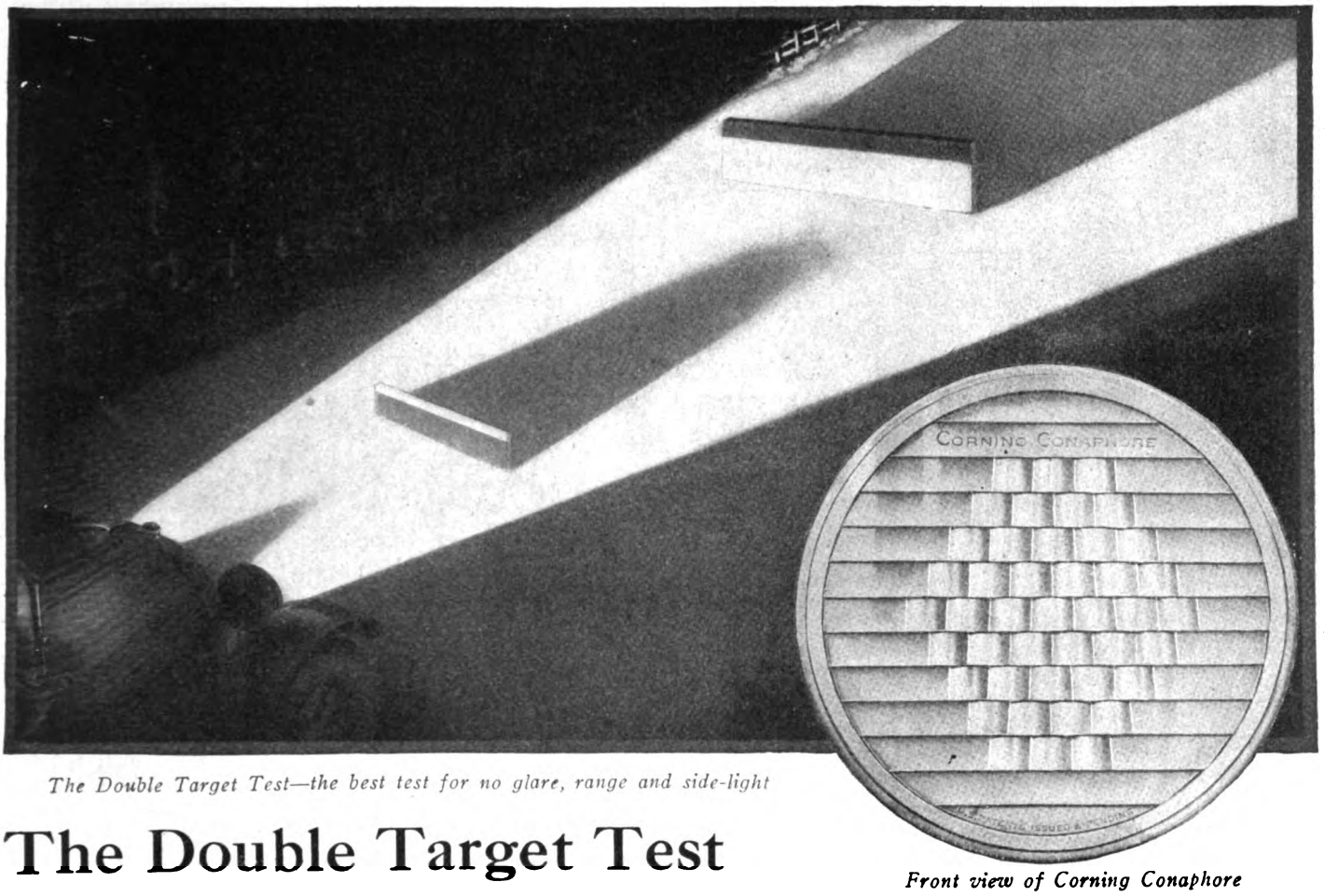
We want distributors in every important center in the country. We have a proposition that requires but little capital but which offers big monetary reward.

This is a great chance for industrious and intelligent men in the industry to get into business for themselves. Get our plans—they're mighty interesting.

Pouvailsmith Corporation

POUGHKEEPSIE, NEW YORK

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The Double Target Test—the best test for no glare, range and side-light

Front view of Corning Conaphore

The Double Target Test

The Only Headlight Glass That Passes it

THE Double Target Test is the most important test of headlight efficiency. It is the best test for no glare, range and side-light. Only one headlight glare passes this test—the Corning Conaphore, a new invention manufactured by the Corning Glass Works.

How the Test is Made

Two targest are placed on the road in front of a car.

The first target is 22 inches high and 10 feet from the car. The second is placed beyond the first one, 30 feet from the car. It is about 4½ feet high and a horizontal line is drawn across it 42 inches from the road.

The intense beam from the Corning Conaphore shoots over the first target and completely illuminates the second target below the 42-inch line.

Other headlight glasses designed to prevent glare, dump the light right in front of the car, completely illuminating the first target, but throwing only a faint light on the second.

The Corning Conaphore *does not dump* the reflected light in front of the car where it is not needed, but shoots it out in a low, wide, strong beam. It gives 500-foot range, with ample side-light and no glare.

A New Invention

The Corning Conaphore has a smooth outer surface and a series of patented horizontal corrugations on the inner face. This design bends down the light rays and shoots them out in a long, intense beam, never more than 42 inches above the road, giving wonderful range and ample side-light, but no glare.

Noviol Glass Causes Light to Pierce Fog

Corning Conaphores are made of a new patented glass—Noviol Glass. This is a golden-tint glass which gives the Corning Conaphore a distinctive appearance.

Noviol Glass causes the beam of light to pierce fog or dust and eliminates back-glare. It makes the green along the roadside stand out. No ordinary headlight glass has these features. Noviol Glass is controlled by the Corning Glass Works.

Made in Two Kinds of Glass

Corning Conaphores are made of clear glass as well as Noviol Glass. Clear glass Conaphores are equally efficient in giving long range and eliminating glare, but lack the added advantages possessed by the Noviol Glass of eliminating back-glare and penetrating fog or dust. We strongly recommend the Noviol.

Easy to Install

You will find the Corning Conaphore easy to install. Simply take out the glass now in your headlight and put the Conaphore in its place. Sizes are made to fit all cars. In ordering give name, model and year of your car, and diameter of your present headlight glass. All progressive dealers now sell Corning Conaphores. Put a pair on your car today.

Price List

Noviol Glass	Per pair	Clear Glass	Per pair
3 to 4⅞ ins. incl.	$1.30	3 to 4⅞ ins. incl.	$0.80
5 to 6⅞ ins. incl.	2.40	5 to 6⅞ ins. incl.	1.60
7 to 8⅛ ins. incl.	3.50	7 to 8⅛ ins. incl.	2.50
8⅝ to 10 ins. incl.	4.50	8⅝ to 10 ins. incl.	3.00
10⅛ to 11⅛ ins. incl.	6.00	10⅛ to 11⅛ ins. incl.	4.00

Prices 25 cents more per pair west of Rocky Mts.
Sizes vary by steps of ⅛ inch.

Nation Wide Advertising

A progressive national advertising campaign for Corning Conaphores is scheduled. Full pages in the Saturday Evening Post, Collier's, Literary Digest and motor publications will be used. Already many advance orders for Conaphores are being received. Jobbers and dealers should send in their orders for Corning Conaphores at once to insure early delivery. Write for 1917 proposition.

CORNING GLASS WORKS

Corning Sales Division

Edward A. Cassidy Co., Inc., Managers

536 Foster Building New York City

CORNING CONAPHORE

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Sell

HILL PUMP VALVE CO. UTILITY CHICAGO U.S.A.

UTILITY Protected Heaters

To These Waiting Prospects:

Every farmer with an automobile, every city or country salesman, every R. F. D. mail carrier with a motor car, every country and most city doctors, every owner who can afford a limousine or winter top, every driver who shivers behind flapping side curtains—

All these, and many more, are *immediate prospects* for UTILITY Protected Heater sales. Do any of them live in your territory?

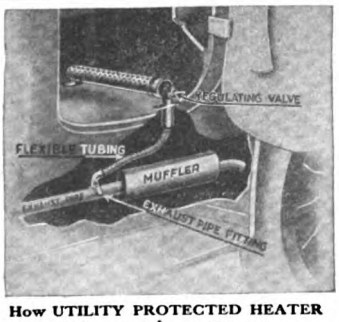
If they do, get busy and sell them UTILITY Protected Heaters, because—

No Need to Ask More

Standard Model Only $15

Utility Jr. For Fords $7.50

Unwise to Ask Less



How UTILITY PROTECTED HEATER Is Attached to the Exhaust

The Easiest Selling Season IS NOW!

When your customers and prospective customers are cold, is the easiest time to sell them heat—and UTILITY Protected Heaters. Get them when they drive in with cold feet and hands. Show them UTILITY Protected Heaters—and sell them fast.

UTILITY Protected Heaters really heat their cars. Take the place of the foot rail. Useful all year 'round, *with and without heat*. Once installed they stay installed. No need ever to take them out. Cut no big holes in the floor. Let in no outside drafts. Collect no dirt. Always give just the right amount of heat.

And you need carry ONLY ONE MODEL for big cars—ONE MODEL for Fords, at the prices that sell.

Write or wire for complete details and discounts.

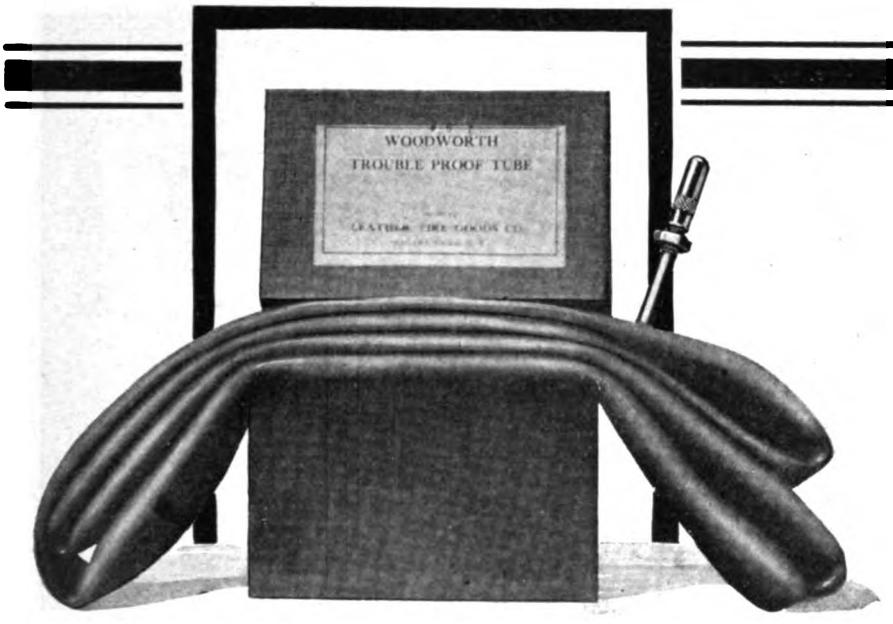
Hill Pump Valve Co.

Archer Ave. and Canal St., CHICAGO

Manufacturers of Famous UTILITY Auto Specialties

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WOODWORTH
Trouble-Proof TUBES



—are finest red rubber—antimony cured — hand made—high grade—at a fair price.

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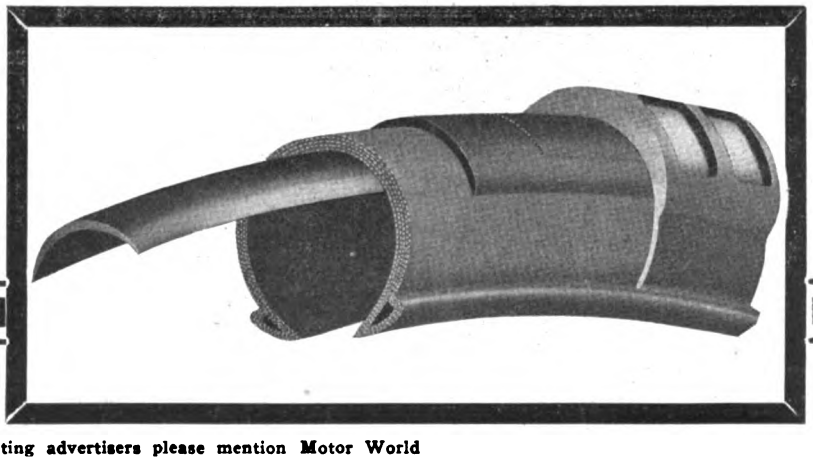
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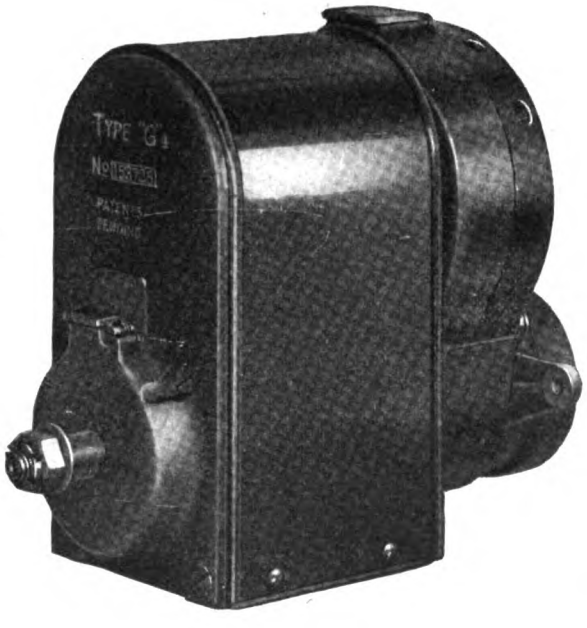
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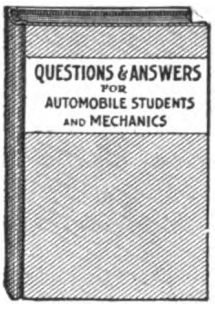
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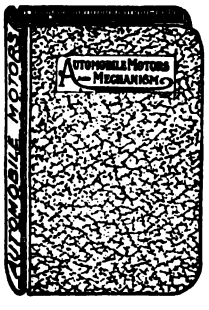
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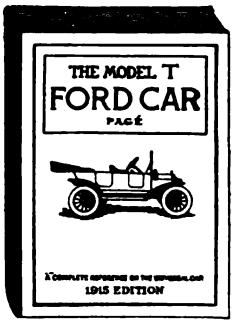
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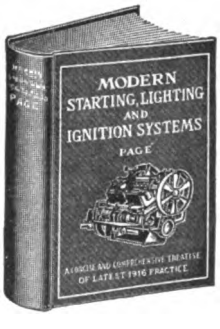
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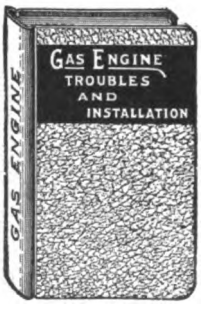
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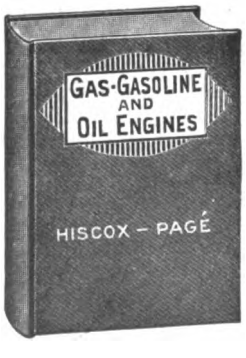
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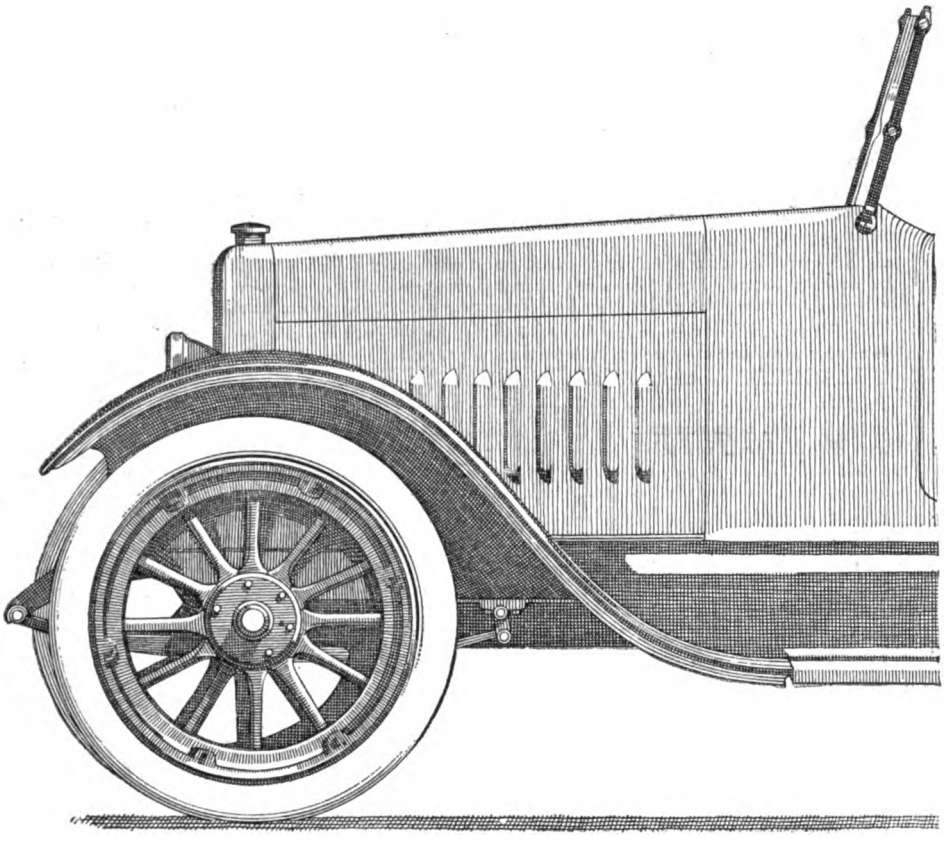
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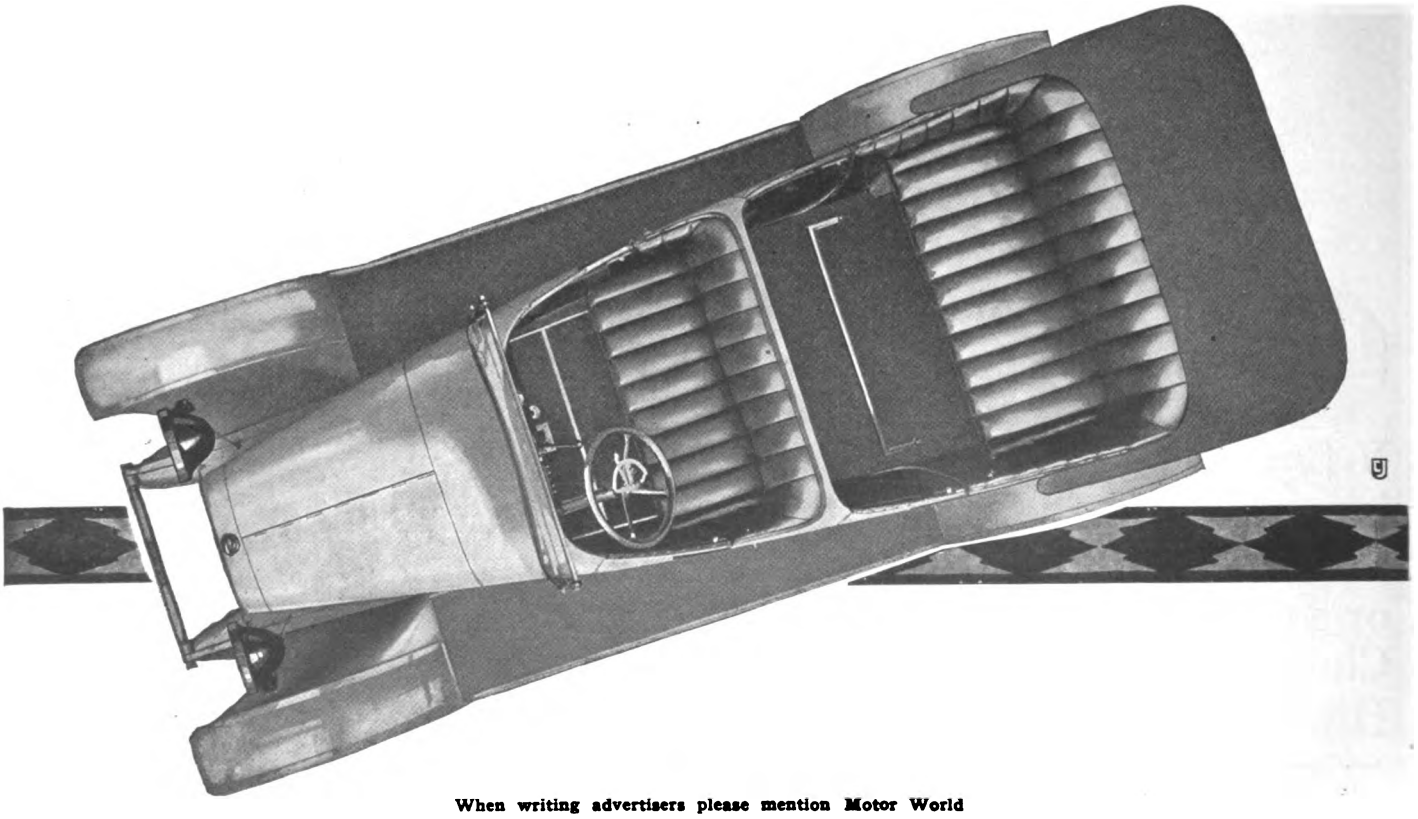
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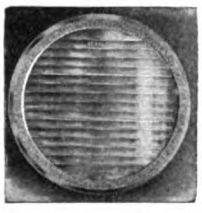


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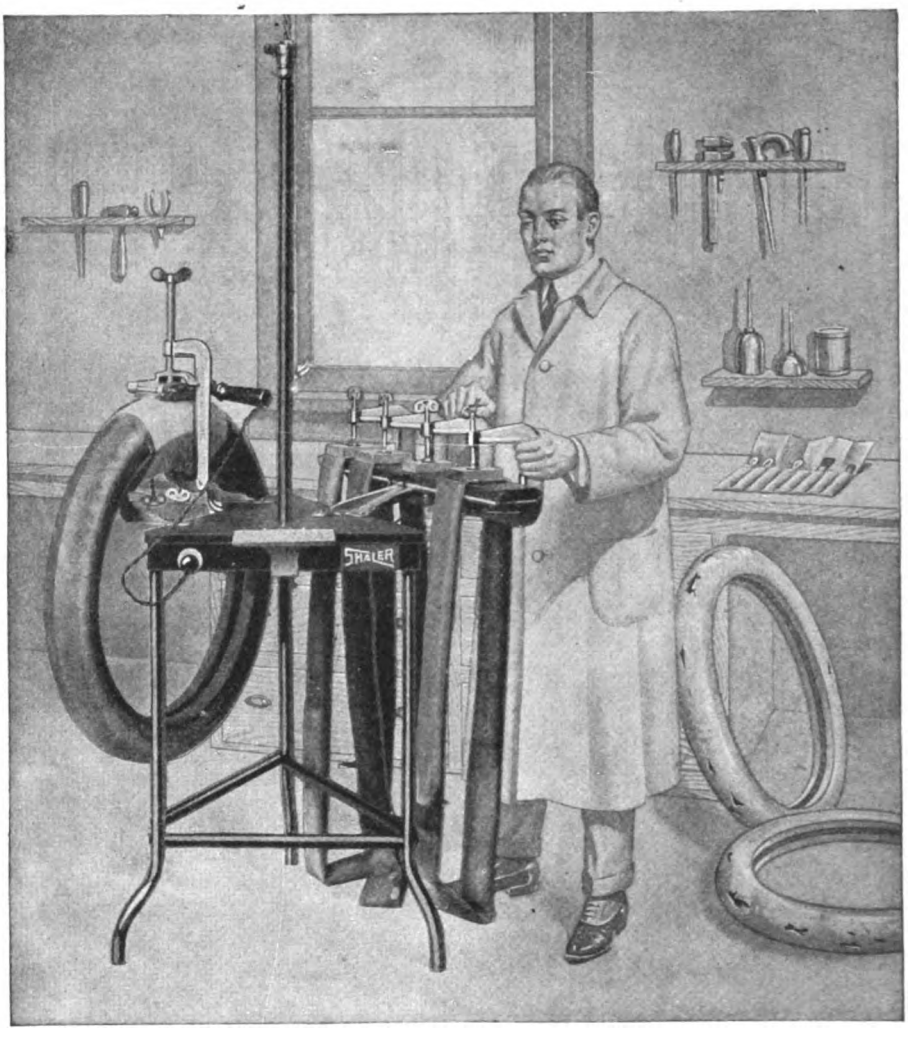
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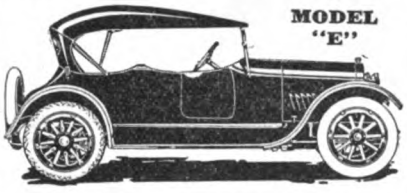
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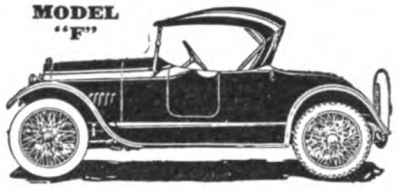
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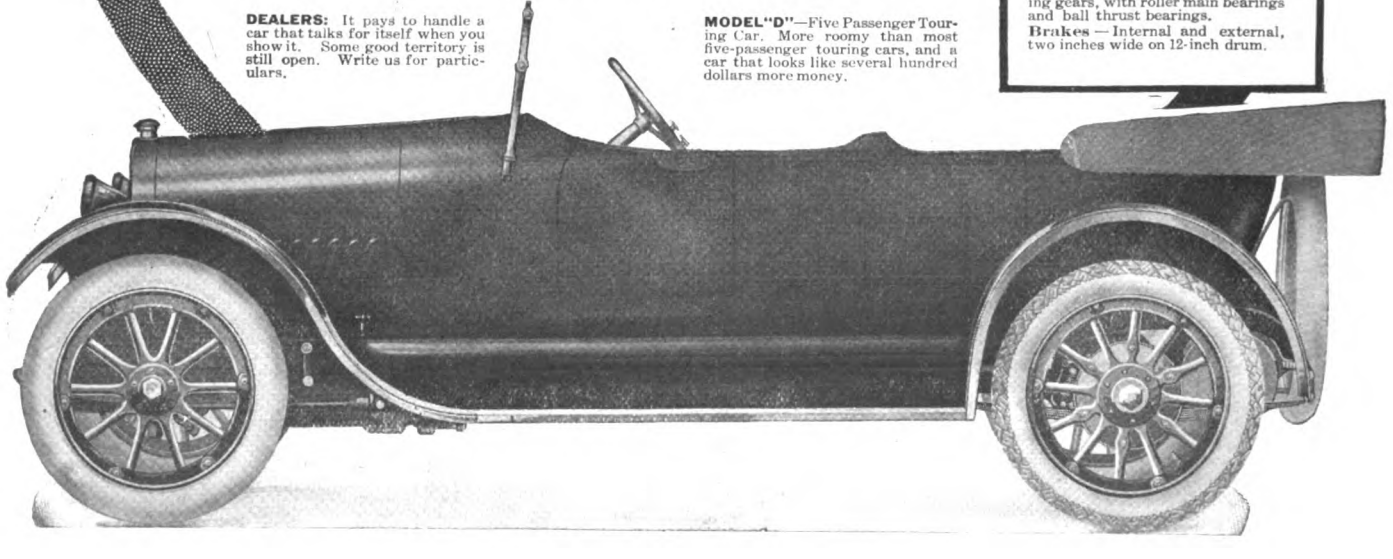
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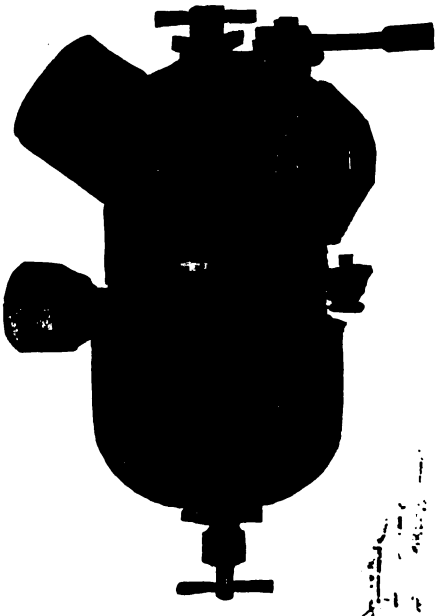
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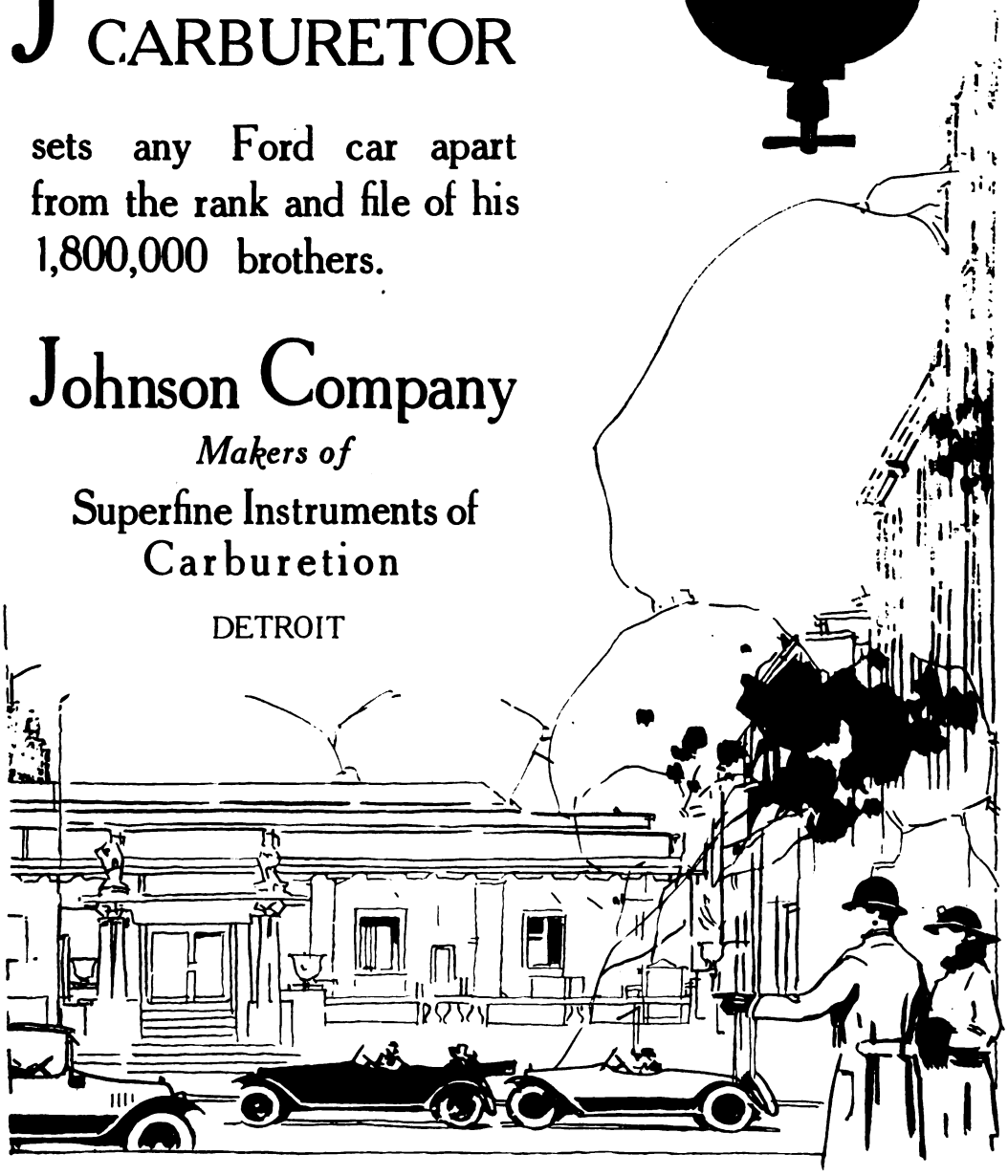
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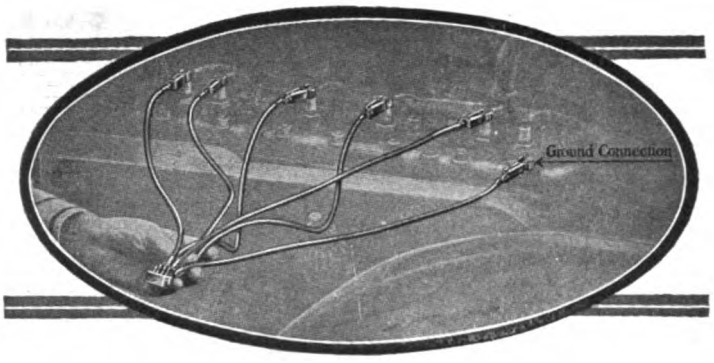
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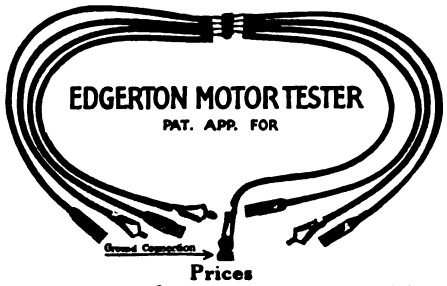
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The Edgerton Motor Tester consists of several high-tension cables flexibly and electrically connected to a central member at one end and having at the other end of each cable an attachment for connection to a ground on the motor under test; also to the binding posts or terminals of the spark plugs of the motor.

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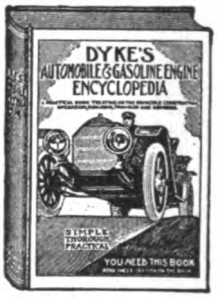
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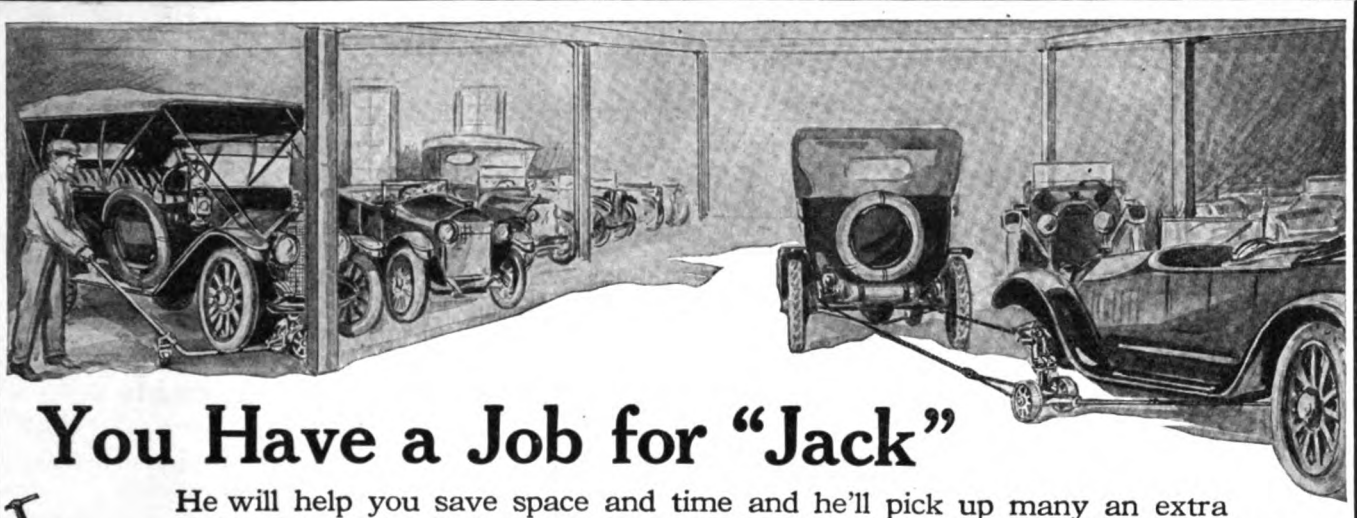
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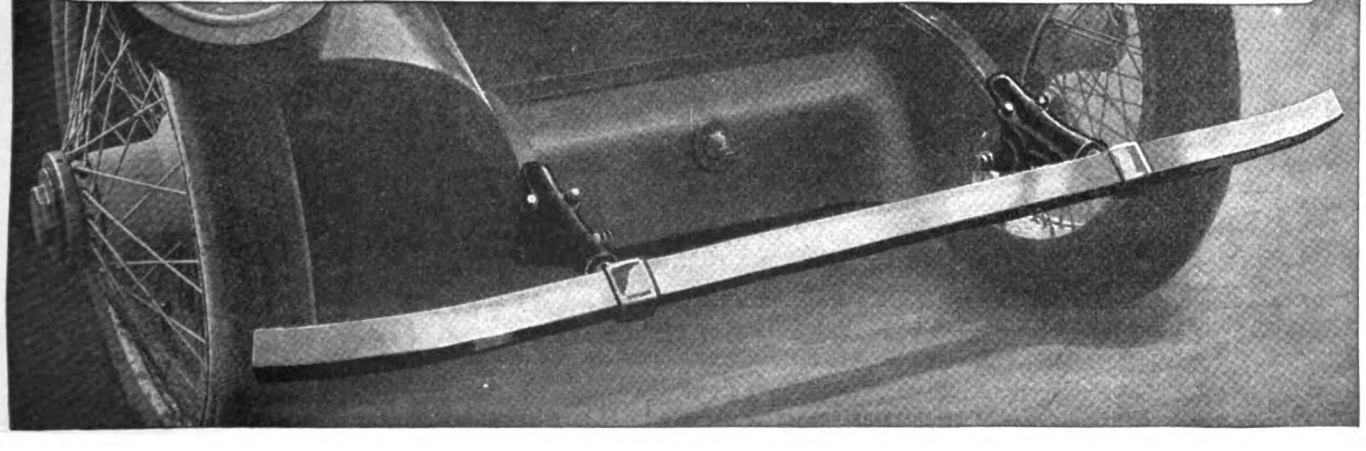
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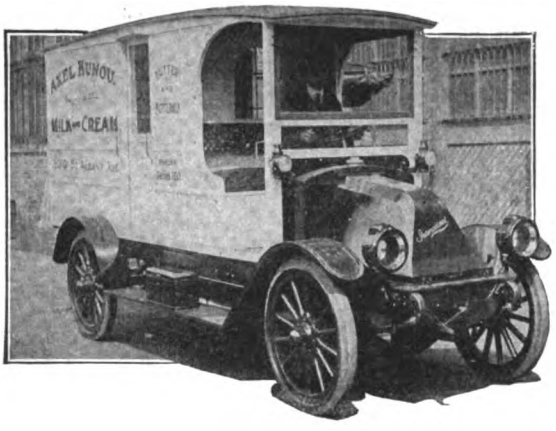


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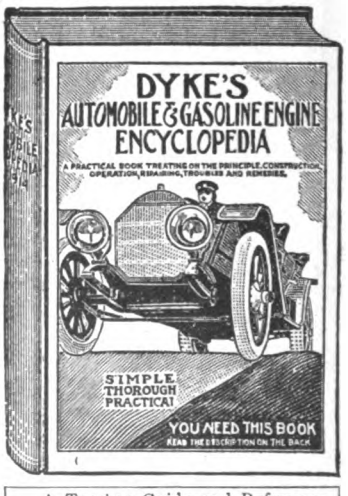
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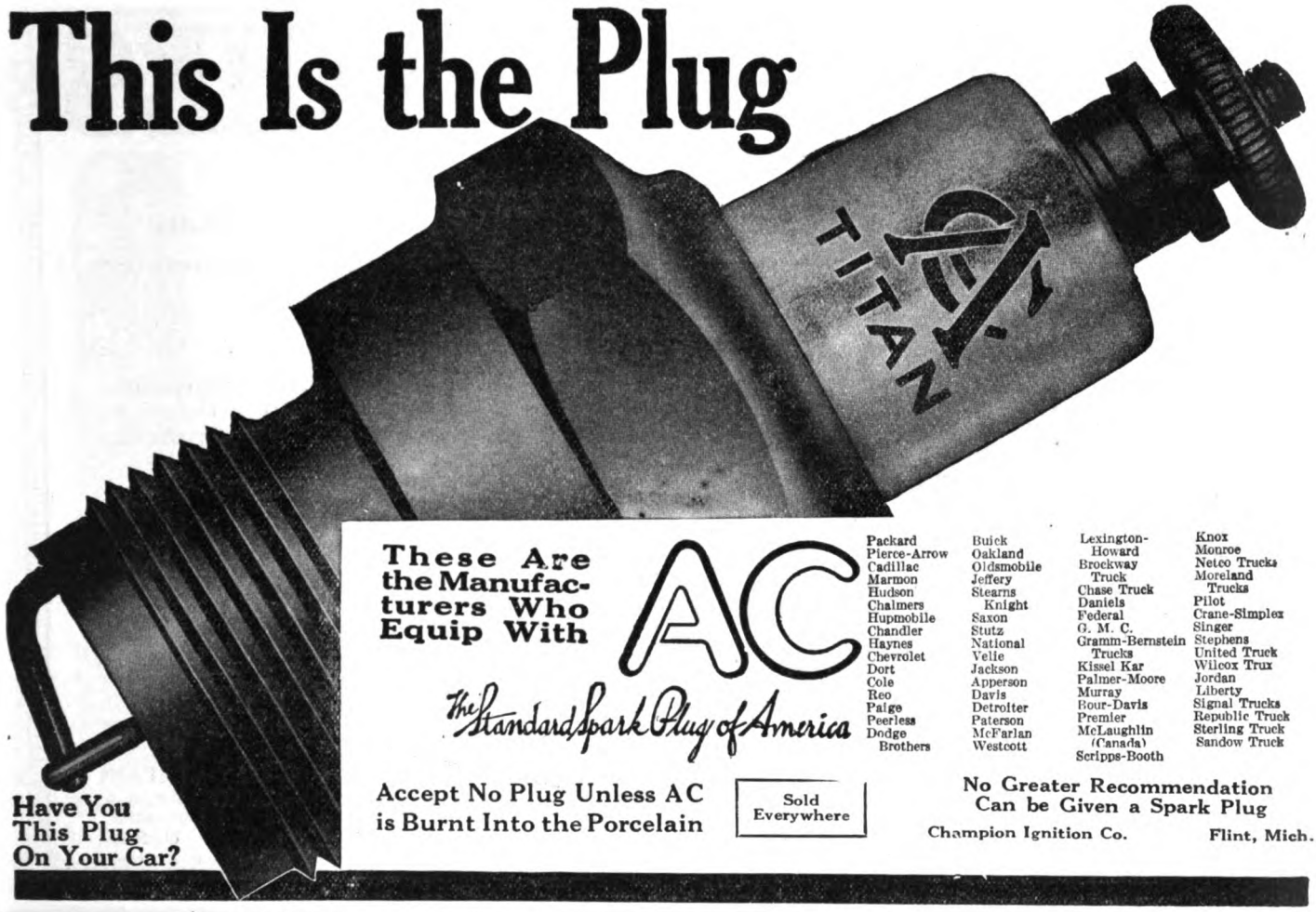
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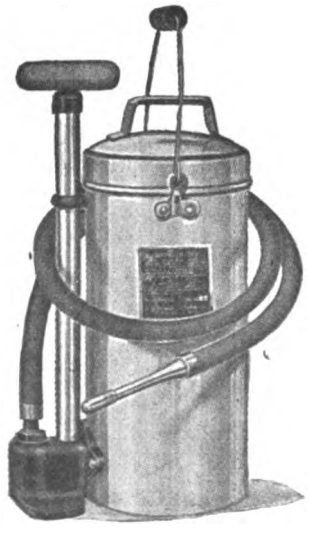
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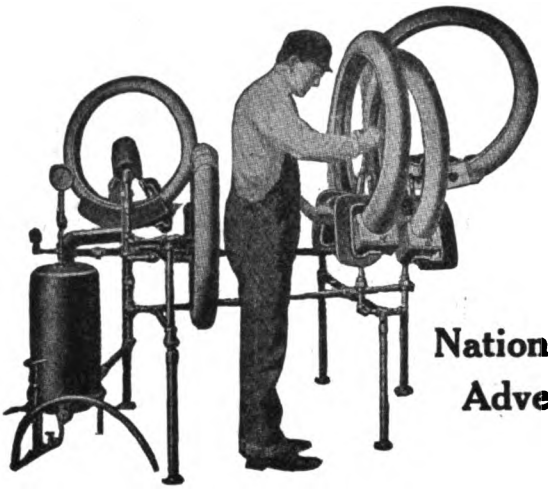
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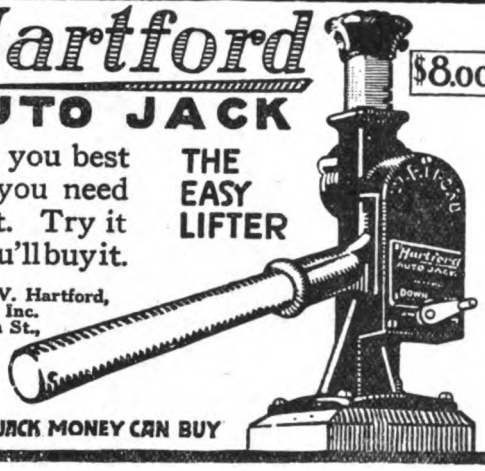
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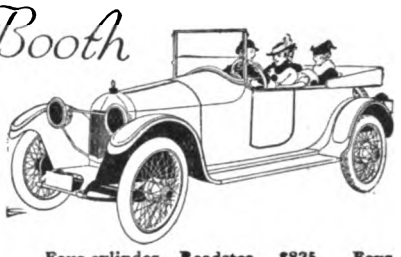
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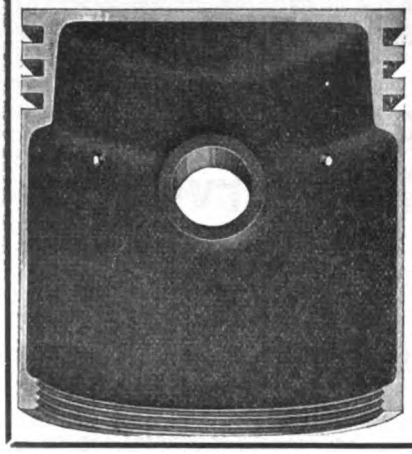
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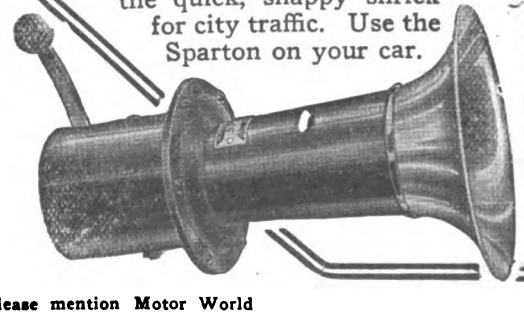
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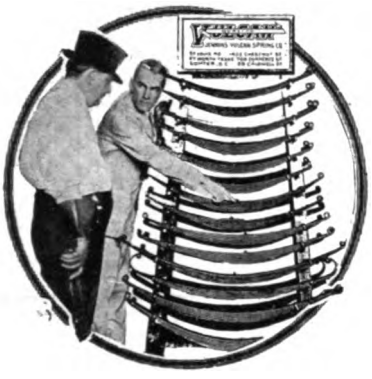
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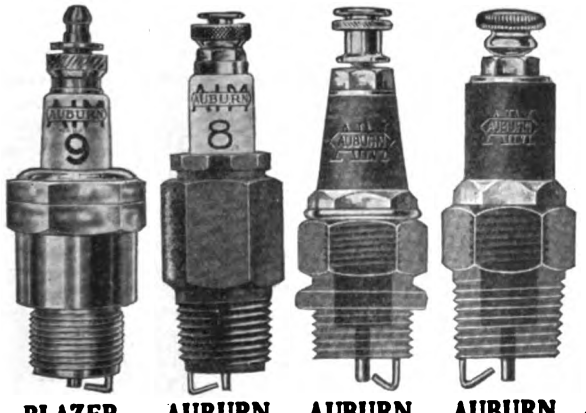
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LOOK FOR THE AIM BEHIND THE NAME

AUBURN VALVE LIFTER



Price 75 Cents Each



BLAZER	AUBURN	AUBURN	AUBURN
Firebo Insulation	Porcelain	Motorcycle	Mica
Price $1.00	75 Cents	Price $1.00	Price $1.00

Auburn Ignition Mfg. Co. AUBURN, N.Y. U. S. A.



The Biggest Selling Staple of the Year!

Gives 42% to 54% Greater Gasoline Mileage by Actual Official Tests

Did you see the page advertisement of the Wilmo Manifold in the December 30th issue of The Literary Digest?—

And the two page announcement in the special Dealer Supplement of the same widely read paper?

They were the opening guns in the heavy advertising campaign of the Wilmo Manifold, the combination exhaust and intake that saves fuel and abolishes virtually all valve and carbon troubles.

Think of it—actually 42% to 54% greater gasoline efficiency, as shown by actual A. A. A. tests made under everyday driving conditions.

Wilmo Manifold

Attached in a few minutes with a monkey-wrench. No holes to bore.

Gets the car away immediately with all cylinders hitting. Keeps a clean engine clean.

Insures virtually same increased efficiency from lower grades of gasoline as from costlier grades.

Keeps the car in full commission during winter by eliminating engine trouble due to cold weather.

Manufacturers of high-priced cars have spent hundreds of thousands of dollars in the attempt to deliver superheated, vaporized gasoline to the motor. Now at the cost of only a few dollars, the Wilmo Manifold accomplishes all this, and more.

Made for various cars and models. Sells from $7.50 up. Within easy reach of every motorist.

Backed by big men and a real factory.

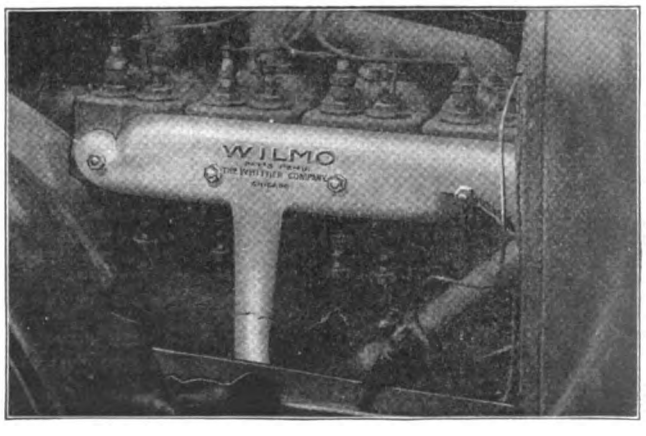
Every dealer, jobber and garage man should investigate this live opportunity. Write for results of exhaustive official tests, prices, and helpful sales proposition.

Without doubt this is the biggest winter money-maker ever introduced. So, write now and reap the full benefit of the national advertising now under way.

The Whittier Company

First National Bank Building, Chicago

Wilmo Manifold on Overland. Note accessibility to valve adjustments.



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NEWS BULLETIN

New model of Disco Electric Starting and Lighting System, which will be announced in the trade papers next week, shows such marked improvement over the common types of electrical systems that it is sure to cause an unusual amount of interest throughout the trade.



DELION
Long Service
TIRES

Each Delion dealer gets *all* the Delion trade in a definitely-named territory. This holds good *permanently*. And he gets the profits he *should have* in tires. Investigate.

DELION TIRE & RUBBER CO., Inc.
Main Office: 1922 Broadway, New York
Chicago Office: 3449 Michigan Ave., Chicago

BROWN-LIPE
GEAR-CO.
TRANSMISSIONS
SYRACUSE, N.Y.
DIFFERENTIALS
BROWN-LIPE
CHAPIN CO



Fedders Radiators

Fedders quality is largely the result of 18 years' specializing in radiator production.

Fedders Manufacturing Co.
Buffalo New York

Inter-State

The reputation, performance, appearance and price of Inter-State cars prove their

EXTRA VALUE

Series T—Five Passenger Touring Car
Series TR—Standard Roadster
Series TD—Divided Front Seat Touring Car
Series TR4—Four Passenger Roadster
Series TC—850 lb. Delivery Wagon

Inter-State Motor Co. Muncie, Ind.

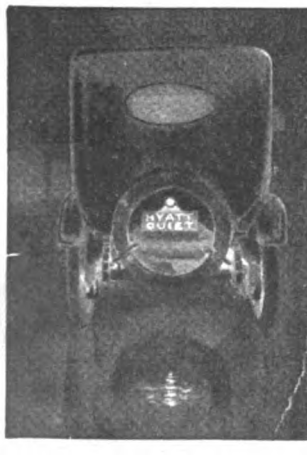
SUNDERMAN $5
Vacuum Carburetor
Saves 30 to 50% on your Gasoline Bill
F. O. B. Newburgh

Starts Easily in Cold Weather

Combines Power, Quick Pick-up, Fast Getaway, Flexibility, Safety from Backfire and Operating Economy with a Remarkably Low Price, for any car up to 45 H. P. A Wonder on Fords.

DEALERS—Fine Territory Still Open—AGENTS

SUNDERMAN CORPORATION
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Western Sales Office: Detroit, 403 Kresge Bldg.



HYATT QUIET
The Roller Bearing for Automobiles

Bunting Bearing Bronze IN Cored Bars

BUNTING BEARING BRONZE

Bunting Bearing Metal is standard today with both Manufacturer and Repairman. Is for sale by most any Jobber or can be purchased direct from us.

Ask for Pamphlet "Y." STOCK SIZES

Piece No.	Outside Diameter	Inside Diameter	Length	Approximate Weight
A	1	½	12	2
B	1¼	½	12	3½
C	1½	⅝	12	5
D	1¾	¾	12	7
E	2	1	12	8⅛
F	2¼	1¼	12	10
G	2½	1½	12	11½
H	2¾	1¾	12	12⅞
I	3	2	12	13⅞
J	3¼	2¼	12	15⅛
K	3½	2½	12	17
L	4	3	12	21
M	4¼	3¼	12	20

The Bunting Brass & Bronze Co., 717 Spencer Street Toledo, Ohio

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BEST DEALERS EVERYWHERE HANDLE

BEST BY TEST FOR 24 YRS.

NON-BUBBLING QUICK FLOW
FLUXINE
BRAZING COMPOUND

SOLD BY JOBBERS ONLY IN 1-5 & 10 lb. SEALED BOXES

MAKES STRONG, PERFECT JOINTS

FLOWS WITH SPELTER—NO WRIGGLING
NO WASTE OF SPELTER OR FLUX
BRAZES AT LOW HEAT—PREVENTS BRITTLENESS

Manufactured only by

KREMBS & CO., 173 N. Green St., CHICAGO

BOSCH MAGNETO IGNITION

is reliable—every championship race of 1916 was a Bosch Magneto Victory—every one. You can have that same reliability of ignition by simply insisting on Bosch.

Be Satisfied *Specify Bosch*

BOSCH MAGNETO CO., 224 W. 46th St., New York

EST.—1897
BUTLER MFG. CO.

Twenty Years of Practical Engineering, Up-to-date Equipment and skilled mechanics insure you of results which will equal the very best motor building known.

CYLINDER REGRINDING and FITTING NEW PISTONS

Standard cast iron, light weight semi-cast iron and aluminum alloy pistons.

BUTLER MANUFACTURING CO.
Established 1897 INDIANAPOLIS

"Clero Horns"
is the other name for
"Dealer Profit"

Every live dealer in this country realizes that the only successful business is a profitable business.

We want to aid in making your business more profitable—and we can do it.

Clero Horns are manufactured by a big organization with unexcelled facilities for putting highest quality into large production, and thereby insuring low list prices, liberal discounts—and consequent good profits. We want every dealer who handles accessories to write us at once. We will send our irresistible profit making proposition by return mail.

Don't put it off until a later time, but write for our "AA" dealer proposition at once.

Most Liberal and Livable Discounts to the Trade

THE FITZGERALD MANUFACTURING CO.
Department C Torrington, Conn.

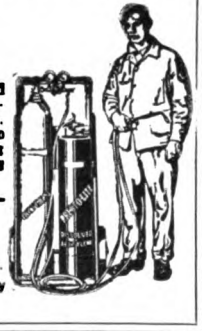
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Oxy-Acetylene Welding

Savings made please your patrons and pay good substantial profits

PREST-O-LITE
Dissolved Acetylene
(Ready-made carbide gas)

adds to the efficiency and usefulness of any good welding equipment. We furnish thoroughly high-grade welding apparatus for $60.00 (Canada, $75.00). The average user will also need gas cylinders at an additional cost, and about $10.00 worth of welding supplies. Truck and special equipment for cutting operations at extra cost.

Send for details of Prest-O-Lite Service for Oxy-Acetylene Welding.



THE PREST-O-LITE CO., Inc.
The World's Largest Makers of Dissolved Acetylene
287 Speedway, Indianapolis, Ind.
Canadian Office and Factory, Merritton, Ontario

BENFORD
GOLDEN GIANT
SPARK PLUG

22 karat gold plate. Price $1.

BENFORD MANUFACTURING COMPANY
Mount Vernon, N. Y.

SHELDON

MAKERS OF SPRINGS & AXLES FOR OVER FIFTY YEARS

National Speedway Tires

30x3	Non-Skid	$12.05
30x3½	Non-Skid	15.60
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33x4	Non-Skid	25.65
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National Rubber Co., Pottstown, Pa.



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IN
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The peer and pioneer of automobile heaters. Soon to be announced as regular equipment on two of America's smartest cars.

IMPORTANT FEATURES

Heats from exhaust. No noise, no odor, no back pressure, no expense to operate.

Extension brackets with swivel joint same as regular foot rest; **our exclusive feature.**

366 inches of heating surface, by far greater than any other.

Uniform heat, full width of tonneau.

Easily attached. Highly ornamental.

Approved and endorsed by manufacturers, jobbers and dealers.

Do not accept substitutes or infringing devices, but insist on having the original K.P. FOOT REST HEATER from your dealer or direct from the

K.P. MANUFACTURING CO., Inc.
246 West 54th Street NEW YORK CITY
Also Mfrs. of the K.P. UNIVERSAL RIM TOOL

Backus Utility Auto Lock
Protects Car and Contents



The Backus Lock with its mechanical fingers prevents the theft of robes, garments, suitcases and articles left in the car.

Locks in any position—indestructible. Every lock has different key combinations.

Our liberal trade discount yields a good profit. Send for literature.

Backus Novelty Company
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Smethport, Pa.

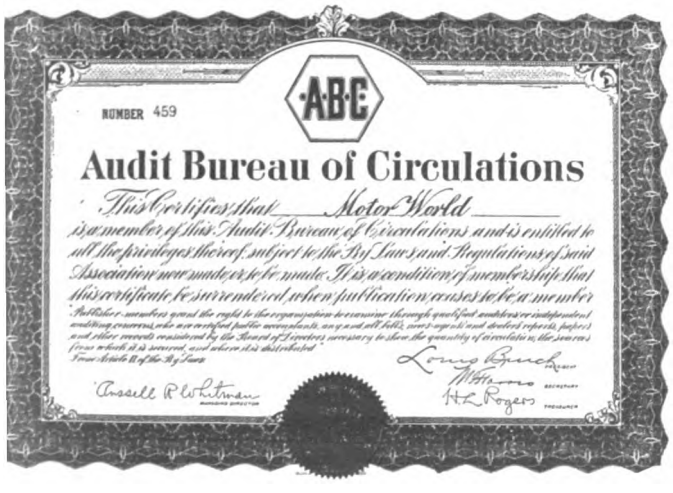
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HERE IS THE
BERKSHIRE 96b
FOR FORDS



It has an *extra long shell,* and the *specially imported Kaolin Porcelain* used in this plug was fired at extreme heat to *insure extraordinary durability.* Same *self-cleaning* design as standard plugs. Meteor wire, the highest grade alloy known for this duty, is used for sparking points.

PITTSFIELD SPARK COIL CO.
PITTSFIELD, MASS., U. S. A.



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Cloverleaf—5 Passenger—Roadster
Racer and Commercial Bodies

Write for Prices

The F. A. Ames Co., Inc.
OWENSBORO, KY.

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"Eklips" SPARK PLUGS

Made for all cars and motorcycles. A strictly first-class plug at a reasonable price. Many superior features. Picks up quickly and always give a good spark. Soot-proof and oil-proof. Splendidly finished and a fast seller anywhere.

Write for full description, prices and discounts.

THE FULTON CO.
721-23 National Ave. Milwaukee, Wis.

The
BRUNSWICK
"A Personally Selected Car"

Our aim has been to build a car as efficiently and equip it as comfortably and completely as a man who combines the best taste with a knowledge of automobile engineering practice would wish to build and equip a car for his own use.

BRUNSWICK MOTOR CAR CO.
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Factory: Newark, N. J.

Model L
$100.00
Model H
$138.50
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Peoria

1917 "FASCOS" are better than ever

In spite of the advance in the cost of materials, FASCO RACING BODIES, for Ford cars, are still made of the finest materials available. New improvements have been added to increase the ease, comfort and classy appearance of this now famous speedster.

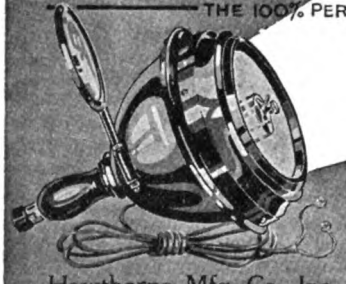


Write for Our New Literature

You are certain to be impressed with the appearance of this French Type of Body. THERE ARE 3 MODELS OF FASCO THIS YEAR, one with fenders. We also have added a classy BUCKET SEAT to our line and the finest OIL TANK that can be made. Let us send you descriptions of these "FASCO" products. Write today.

Fried & Stonier Co.
PEORIA Dept. 15 ILL.

OLD SOL
NITROJECTOR No 100
THE 100% PERFECT SPOTLIGHT



$10

Complies with all laws for no-glare devices. Other dependable Old Sol Spotlights are No. 70—$7.00, No. 77—$5.00
Ask for Old Sol for Safety
Hawthorne Mfg. Co., Inc., Bridgeport, Conn., U.S.A.

IMP CARBON CHASER
Gives More Power Greater Speed
The New Fuel Element
Better Ignition and Uniform Combustion

SAVES 25% GASOLINE
ELIMINATES CARBON

One IMP Tablet in every FIVE Gallon of Gasoline will do the work. Retail price 50c can of 20 tablets. Exceptional discount to Jobbers and Dealers.



Convince yourself Mr. Dealer—send for FREE TRIAL
And Attractive Proposition



Imp Carbon Chaser Corp.
1465 Broadway, New York
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REDEE HYDROVAPORIZER

REMOVES CARBO



PRICE $6.00 EACH

Greater Efficiency in Your Motor Means Longer Life, Less Overheating, More Mileage.
Write for Bulletin with Full Particulars.
REDEE MANUFACTURING CORPORATION
Successors to Accessory Mfg. & Sales Company
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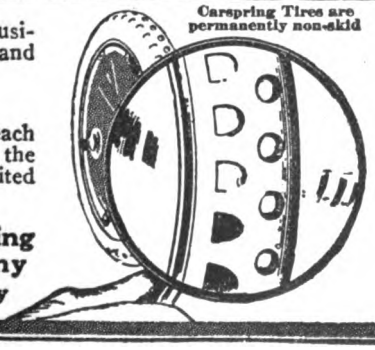
CARSPRING TIRES
BEST UNDER A CAR BEST ON EARTH

Will establish you in business on a permanent and profitable basis.

Our Policy:
One good dealer in each territory, backed by the best goods and unlimited co-operation.

New Jersey Car Spring & Rubber Company
Jersey City, New Jersey

Carspring Tires are permanently non-skid



Mosler VESUVIUS Plug



PRICE $1.00 AT ALL DEALERS
Stone Insulator.
Absolutely gas-tight.
Has no equal for Speed and Power.
Sizes and threads for all motors.
New schedule of trade prices.

A.R.Mosler & Co. New York, U.S.A.

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JUMBO SPARK PLUGS

are built to stay on the job under the hardest conditions. We show here our big leader

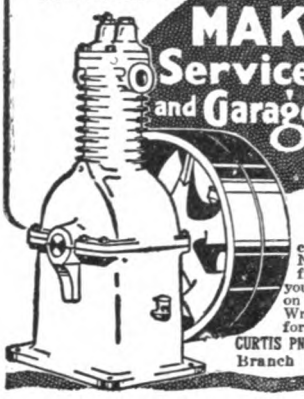
JUMBO "MOLITE"
Price, $1.25

Guaranteed for the Life of the Car. Other types for Fords and other cars. $0.75 and $1.00. Ask your dealer.

Gibson-Hollister Mfg. Co.
3380 Washington Street,
Jamaica Plain, Mass. 69-86

5 Sizes—125 Combinations

MONEY MAKER For Service Stations and Garage Men

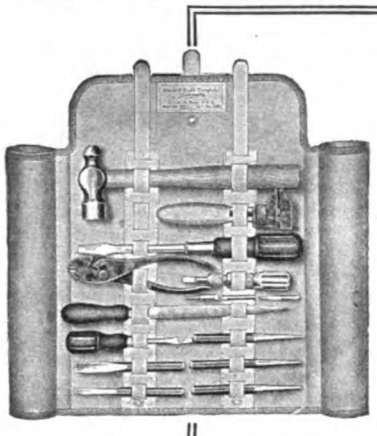


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CURTIS AIR
Free From Oil

The Curtis is the only Garage Air Compressor that can't flood the cylinder with more oil than it needs. No oil gets in the air line. This means clean air, free from oil, therefore fewer punctures and blowouts for your customers. Saves them many dollars every month on tire upkeep. Makes and holds customers for you. Write for our liberal proposition. Or, ask your jobber for prices, but insist on the CURTIS.

CURTIS PNEUMATIC MACH. CO., 1546A Kienlen Ave., St. Louis, Mo.
Branch Office: 531B Hudson Terminal, New York



GOODELL PRATT
1500 GOOD TOOLS

MOTOR SETS

$6.00 to $30.00

Goodell-Pratt Company

Toolsmiths

Greenfield, Mass., U.S.A.

Selected Specialties for Fords From the Extensive APCO Line

Every one an instant seller and a good profit earner

DEALERS

Progressive jobbers who are not influenced by price alone in making their purchases carry Apco goods. If your jobber is not of this type and does not carry Apco products tell us your requirements and give us his name. We will see to it that you are taken care of immediately.

AUTO PARTS COMPANY
BLACKSTONE ST., PROVIDENCE, R. I.



Used the World Over
SKF
Quality and Service



Set of three, price $1.00

GOOD BRAKES
—require not only good brake lining but good tools to put it on.

STEVENS
BRAKE LINING COUNTERSINK

will cut a clean, even hole in any style of clutch or brake lining. Its 5/16 inch shank works satisfactorily in either hand drill or power press. Furnished singly or in complete sets of the 3 sizes illustrated. We furnish a complete range of stock for the repairman and dealer. The quality is unquestionable—the prices are right.

Ask your Jobber for Discounts

STEVENS & COMPANY
375 Broadway, NEW YORK CITY

STEVENS NEW YORK

THE AUTOMOBILE

is the industrial, engineering and trade authority of the Automobile Industry—the oldest weekly journal in this field.

Its trade news is complete; its descriptions of new models and products are dependable, being written by its own engineering experts.

THE AUTOMOBILE is edited for those who wish to be thoroughly informed in all matters pertaining to the progress of the manufacture and operation of cars and other products of the industry.

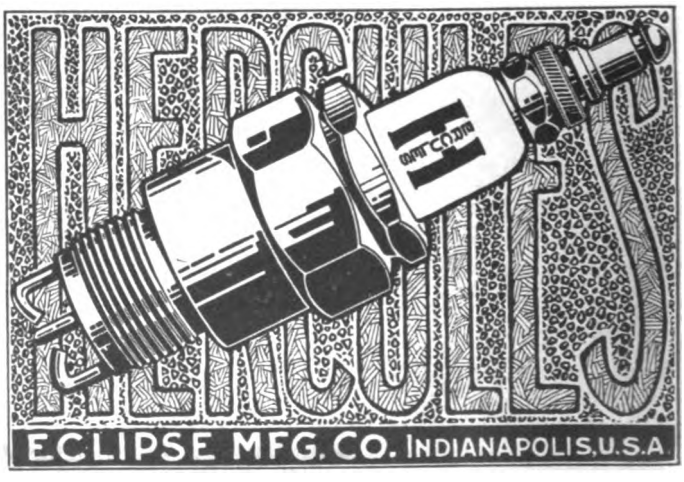
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Products are standard. Their dependability is guaranteed. They make customers and keep them.

Your Jobber Will Supply You

VAN CLEEF BROS.

Manufacturers Dutch Brand Rubber Cements & and Auto Chemical Specialties

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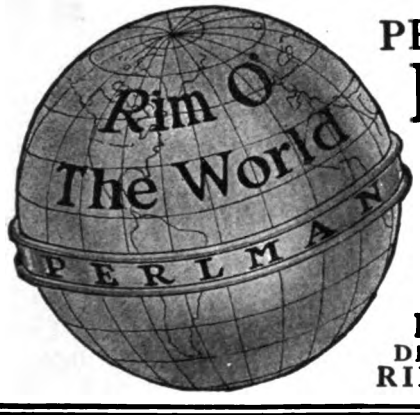


2-In-1 Tread Filler

Johns-Manville FIRE Extinguisher ... Always Ready! ...

SAVES 15% ON AUTO INSURANCE





PERLMAN RIM CORP'N 1790 Broadway, New York City.

CONTROLLING PERLMAN DEMOUNTABLE RIM PATENTS

Beau Brummel Bodies For Ford Chassis

DEALERS—We want to show you what a profitable line the Universal Car Equipment Co. can offer you. Write us today for full information. If you want to handle an exclusive territory proposition we will help you get the business.

Everybody wants to combine Ford dependability and economy with the appearance, comfort and luxury of a high priced car. The man who shows them how is the man who is going to make money. Write us about it today.

UNIVERSAL CAR EQUIPMENT CO.

1306 Bellevue Ave. DETROIT, MICH.

LYON STEEL PRODUCTS

STEEL TIRE RACKS

BULLETIN 109

STEEL RACKS FOR REPAIR PARTS

BULLETIN 110

LYON METALLIC MFG. CO.

AURORA, ILL.

Chicago New York Cincinnati Detroit Pittsburgh

The Majestic Car

A car combining highly developed mechanical features with such beauty of design and completeness in detail as to make it significant in any assemblage of cars.

We wish to get in touch with a limited number of dealers. Dealers who can take advantage of the unique selling features of the Majestic car. The highly finished, completely equipped car is one of the significant selling ideas of the new era in motor car construction marked by the 1917 Show. No other car offers so elegant an equipment as the Majestic which sells complete with an unexcelled eight cylinder motor for $1650.

Exhibited at the New York Show—Space 28-29.

The Majestic Motor Company

1790 Broadway New York City



FROM THE TESTIMONY OF ACTUAL USERS——

it would seem that the

HURLBURT TRUCK

has more nearly solved the least-cost-per-ton-mile-haulage problem than any other truck in use.

It is in a class by itself for low upkeep cost under hard and continuous service.

HURLBURT MOTOR TRUCK CO.

3rd Ave. and Harlem River, New York City

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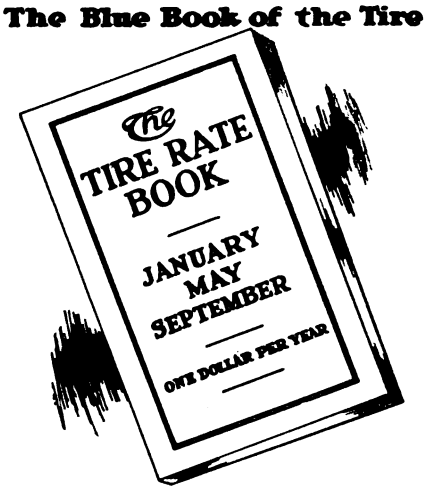
Suppose You—

were called on the phone and asked to quote price on a 35 x 4½ tire of a maker whose product you were not familiar with? Could you afford to waste your time, and the time of your customer, by hunting for that maker's price list—and maybe not being able to find it?

Certainly not!

For your convenience we have compiled the prices of all the leading tire manufacturers' products in a handy pocket size book (size 4¾ x 7½), and you will agree with upwards of 7500 dealers and tire salesmen that it is absolutely an indispensable aid to the successful conduct of the tire selling business.

"The Blue Book of the Tire Trade"



In addition to all of these revised pneumatic and solid tire listings The Tire Rate Book includes fourteen pages of car listings (all models from 1913 up to and including 1917) with accurate information bearing upon tire and rim sizes.

If you want tire size and rim style of the 'Alco, 1913 model, it is in The Tire Rate Book. Every other make (whether it is active or obsolete) is there. The information may be worth dollars in profits to you every day.

Other features are the "Standard Telegraphic Code," inflation tables, a table of metric sizes and their equivalents, etc., etc.

Important changes in tire prices will be announced by many manufacturers on or about Jan. 6th. These changes will all be featured in our January edition. Send your subscription now.

Order by Coupon or by Letter

The Tire Rate Book (Published by Motor World),
239 W. 39th St.,
New York City.

Enclosed please find $..... for ..... subscriptions, beginning with the January, 1917, issue.

Name .....

Address .....

Subscription price, 50 cents per year—January, May and September issues.

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The Clearing House of the Motor Industry

For Second Hand Cars, Surplus Parts, Accessories, Tires, Machinery & all other Special Announcements of a Similar Character

Parts and Repairs

To All Owners of MAXWELL-BRISCOE Maxwell 6-50 Maxwell 4-35

The Maxwell Company has transferred to the Standard Motor Parts Company the entire Service Department on all of the models above listed, and all orders for repair parts should be placed direct with the Standard Motor Parts Company, Newcastle, Indiana.

Better service will be given these owners than ever before, and many reductions in repair parts prices have been effected.

Address all orders and inquiries direct to the Standard Motor Parts Company

NEWCASTLE, INDIANA

MOTORS

E M F 30	$50.00	Overland Mod. 81	$75.00
Flanders 20	75.00	Regal 30	60.00
Rambler Mod. 44	50.00	Everett 30	65.00
Carter Car 1911	75.00	R. C. H.	65.00
Stoddard Dayton 9F	75.00	Great Western	75.00
Overland Mod. 69	75.00	Buick 17	90.00
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Bergdoll 30 Unit Power Plant..... 90.00
Jackson 40 Unit Power Plant..... 90.00
Chalmers K Unit Power Plant..... 100.00
King 1914 Unit Power Plant..... 150.00
Lexington 1914 Unit Power Plant..... 150.00
Auburn 1916 Unit Power Plant..... 175.00

All Motors guaranteed in good shape.

Repairs

We have them for most makes
We save you 50% to 75%.

Money refunded on goods not satisfactory.

AUTO WRECKING CO.

We Tear 'Em Up and Sell the Pieces.

13th & Oak Sts. Kansas City, Mo.

Michigan Owners

Order repair parts direct from the parent company

We can positively protect you against getting misfit parts, poor material and paying exorbitant prices.

It is to our interests as well as to yours to keep your car in good condition for years to come.

Will you help us to accomplish this by ordering only from this company direct?

Signed

Michigan Motor Parts Company
Detroit, Michigan

AutoParts 50% Off

Manufacturers' List Price on Parts for All Standard Makes of Cars

Buick 10-16-17-25
Overlands, 37-69 inc.
EMF, Flanders, 2 and 3 speed Studebaker 25
Maxwells, I, E, K, AB
Chalmers, F, K, N, 36
Mitchell 6, T, J, H
Welch-Detroit
Reo 1910-1911—Regal 30
American Truck
Mets—Hudson 20 & 23
Peerless—Auburn 40
Stevens X—Franklin 6
Everett 4 and 6—Stratford—Krit 2 & 3 speed
Pope-Hartford
Oakland 24-25-33-40-42
Jackson 35 & 50
Cadillac, 1909, 1910, 1912
Stoddard-Dayton, 30 & 50—Great Western
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32x3½	9.10	35x4½	16.80
34x3½	9.60	36x4½	17.25
31x4	11.95	37x4½	17.95
32x4	12.40	35x5	19.35
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30x3½...	8.00	2.25	36x4.....	14.00	3.50
31x3½...	8.50	2.50	34x4½...	16.25	4.00
32x3½...	9.00	2.50	35x4½...	17.00	4.15
34x3½...	9.50	2.55	36x4½...	17.50	4.25
36x3½...	10.75	2.75	37x4½...	18.00	4.36
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32x4.....	12.50	3.20	36x5.....	18.50	5.00
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34x3½...	5.50	1.60	36x4½...	8.25	1.85
31x4.....	6.25	1.65	37x4½...	9.50	1.90
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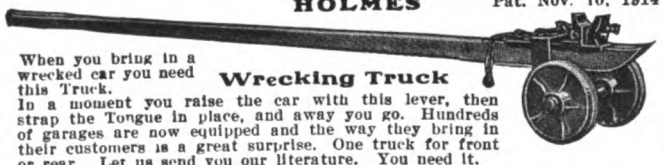
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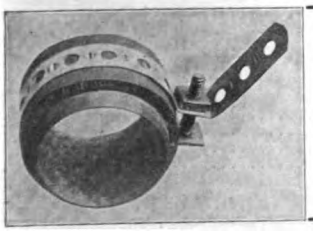
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Advertisers' Index

A

Allen & Curtis..... 112
American Ball Bearing Co..... 60
American Bronze Co..... 58
Ames Co., F. A..... 116
Atwater Kent Mfg. Works.....56 & 57
Auburn Ignition Mfg. Co..... 113
Automobile, The 118
Auto Parts Co..... 118

B

Backus Novelty Co..... 116
Baker, R. & L. Co.....71 to 74
Bayerson Oil Works..... 110
Benford Manufacturing Co..... 115
Bock Bearing Co..... 91
Bosch Magneto Co..... 115
Bourne Magnetic Truck Co..... 75
Brown-Lipe-Chapin Co..... 114
Brunswick Motor Car Co..... 117
Bunting Brass & Bronze Co..... 114
Butler Mfg. Co..... 115

C

Cassidy, E. A..... 95
Castle & Kyte..... 81
Chalmers Motor Co..... 128
Champion Ignition Co..... 109
Champion Spark Plug Co..... 67
Chase, L. C..... 112
Chicago Auto Supply House..... 125
Cole Motor Car Co.....64 & 65
Columbus Varnish Co..... 106
Connecticut Tel. & Electric Co..... 79
Curtis Pneumatic Mchy. Co..... 118
Cutler Hammer Mfg. Co., The.....96B

D

Delion Tire & Rubber Co..... 114
Detroit Battery Co..... 112
Disco Electric Starter Corp..... 114
Du Pont Fabrikoid Co..... 86

E

Eclipse Mfg. Co..... 118
Edgerton Co., R. C..... 109
Eisemann Magneto Co..... 97
Elkhart Carriage & Motor Car Co..... 104
Ellis-Smith Mfg. Co..... 107
Eureka Rim Co..... 88

F

Faw, J. H..... 116
Fedders Mfg. Co..... 114
Fero Machine & Fdry. Co..... 59
Firestone Tire & Rubber Co..... 82
Fitzgerald Mfg. Co..... 115
Foremost Farm Papers..... 68
Fried & Stonier Co..... 117
Fulton Co..... 117

G

Garford Motor Truck Co..... 80
Gemco Mfg. Co..... 107
Gibson-Hollister Mfg. Co..... 118
Goodall-Pratt Co. 118
Grossman Mfg. Co., Emil..... 111
Gulf Refining Co..... 119

H

Hal Motor Car Co..... 99
Hartford, E. V..... 112
Harvey Spring Co..... 109
Hassler, Inc., Robt. H..... 127
Hawthorne Mfg. Co..... 117
Haywood Tire & Equip. Co..... 111
Henney Buggy Branch..... 93
Hill Pump Valve Co..... 96
Holmes & Bros., Robert..... 125
Houk Mfg. Co..... 112
Hudson Motor Car Co.....Front Cover
Hurlburt Motor Truck Co..... 119
Hyatt Roller Bearing Co..... 114

I

Imp Carbon Chaser Corp..... 108
International Harvester Co..... 109
Inter-State Motor Co..... 114

J

Jackson Automobile Co..... 103
Jenkins Vulcan Spring Co..... 113
Johns-Manville Co. 119
Johnson Co. 106
Johnson & Son, S. C.....Back Cover

Digitized by Google

Advertisers' Index

K

Kellogg Mfg. Co. 69
K-P Manufacturing Co. 116
Krembs & Co. 115

L

Legallte Corp. 101
Liberty Motor Car Co. 125
Lunkenheimer Co. 126
Lyons Mettalic Mfg. Co. 119

M

Majestic Motor Co. 119
Marathon Tire & Rubber Co. 70
Mayo Skinner Mfg. Co. 106
Michelin Tire Co. 53
Monroe Motor Co. 100
Mosler & Co., A. R. 117
Motor Age 125

N

National Rubber Co. 115
New Departure Mfg. Co. 116
New Era Spring & Specialty Co. 125
N. J. Car Spring & Rubber Co. 117
New Process Gear Corp. 92
Norma Co. of America 3

O

Oakes Co. 110
Olda Motor Works ..... 83 & 84

P

Perlman Rim Corp. 119
Pittsfield Spark Coil Co. 116
Pouvailsmith Corp. 94
Prest-O-Lite Co. 115

Q

Quaker City Rubber Co. 87

R

Rajah Auto Supply Co. 112
Redee Manufacturing Corp. 117
Reo Motor Car Co. 78
Republic Rubber Co. 90
Robbins & Co. 126
Rubber Insulated Metals Corp. 89

S

Scripps-Booth Corp. 112
Selden Truck Sales Co. 127
Shaler Co., C. A. 102
Sheldon Axle & Spring Co. 115
S. K. F. Ball Bearing Co. 118
Sparks-Withington Co. 112
Speer Carbon Co. 110
Splitdorf Electrical Co. 63
Standard Woven Fabric Co. ..... 3rd Cover
Stande Mfg., E. T. ..... 76 & 77
Stephens Motor Branch 66
Stevens & Co. 118
Stewart-Warner Speedometer Corp. ..... 2nd Cover
Studebaker Corp. 1
Sunderman Corporation 114
Swinehart Tire & Rubber Co. 116

U

Universal Car Equipment Co. 119
Universal Clamp Mfg. Co. 125

V

Van Cleef Bros. 119
Van Sicklen Co. 111

W

Waltham Watch Co. ..... 54 & 55
Waterman Motor Co. 2
Watson Wagon Co. 85
Whittier Co. 113
Williams Foundry & Mach. Co. 125
Willys-Overland Co. 4
Woodworth Mfg. Co. 96A

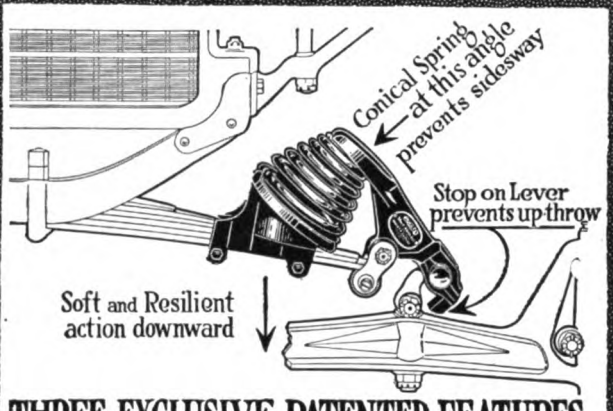
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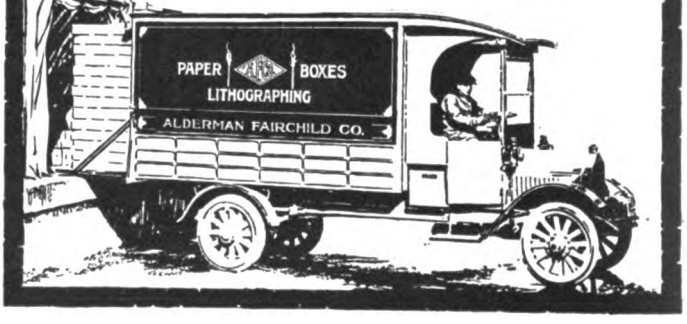
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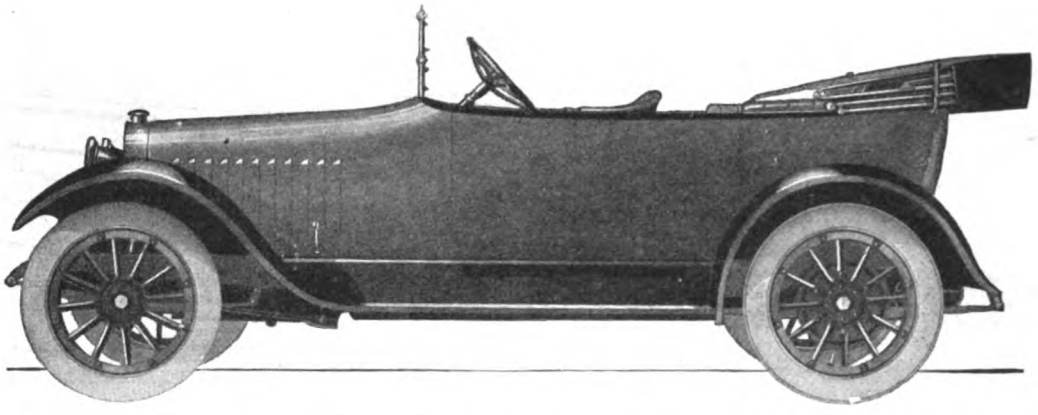
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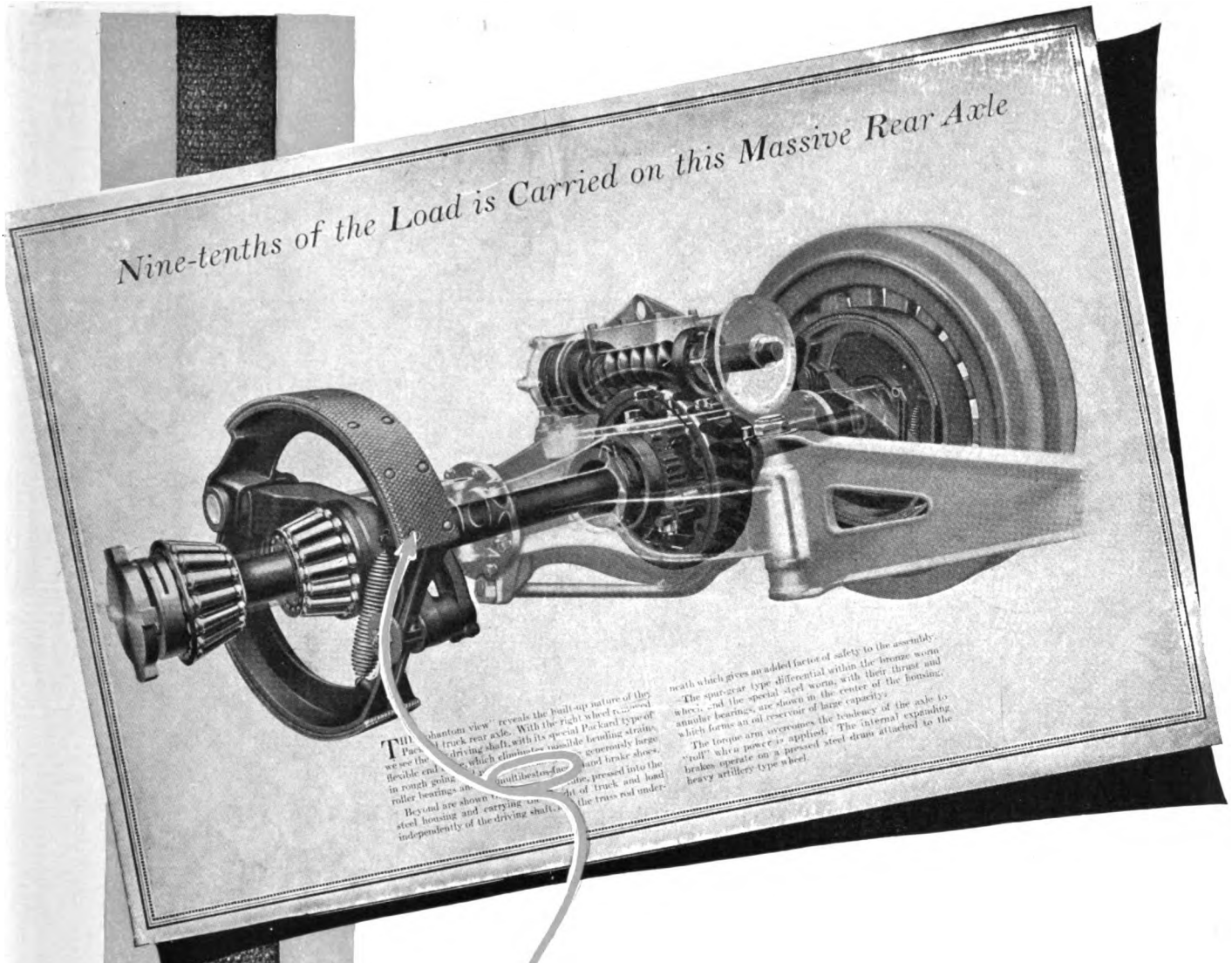
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Protects and preserves the finish. Impervious to dust, water, weather, etc.



For renewing tops, side curtains, etc. Also touching up worn, rusty, metal parts.



Cures 80% of engine troubles. The safest, easiest and quickest method.

THE line shown on this page is The Quality Line. S. C. Johnson & Son stand back of every product they manufacture with a good big advertising campaign. You need not fear any of these products proving poor sellers.

For 1917 our advertising appropriation has been doubled. Advertisements will appear in every issue of all the motor papers and in addition to this we will use large space in all the leading magazines and weeklies. See our five-page colored insert in the January issue of Motor.

Johnson's Products are for sale by all jobbers.

For further particulars or samples of any Johnson Products, write us on your business letter head.

S. C. JOHNSON & SON
Dept. MW
RACINE, WIS.



Removes spots, road-oil, scum, etc., from body, hood and fenders.



An automobile body varnish that amateurs can use successfully. Dries in 24 hours.



Penetrates between the leaves of springs thoroughly lubricating them.

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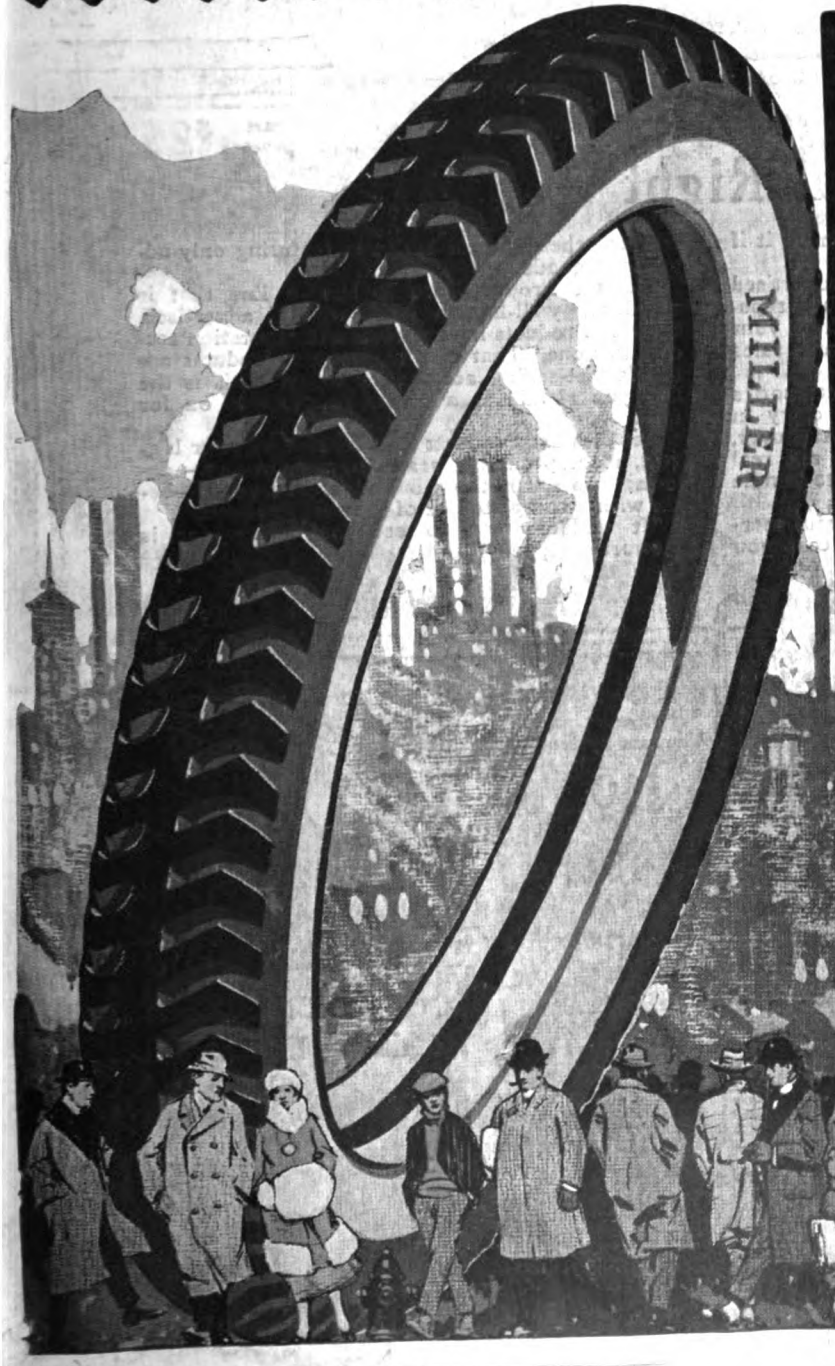
MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Volume L
No. 2

New York, January 10, 1917

Ten cents a copy
Two dollars a year

Miller GEARED-TO-THE-ROAD Tires



Bring Backs or Come Backs?

The tire you sell becomes either an asset or a liability—There can be no middle ground.

Either the tire brings back to the dealer a permanent successful business by giving excess mileage and "no trouble" service, or it comes back like a boomerang, knocking good will and profit into a cocked hat.

Miller tires are **bring backs**—never come backs. That's why the agency for Miller tires is looked upon as a valuable **asset** by every Miller dealer.

The Miller plan of selling tires gives the dealer **all** the profit from **all** the Miller tires sold in his territory—not merely a part of it. It insures a permanent, profitable business because Miller products, whether tires, tubes or accessories, are the greatest "good will" builders in tiredom.

The time to get the Miller agency in **your** town is **now.**

Write or wire to-day for the Miller Plan.

The Miller Rubber Co.
AKRON, U. S. A.

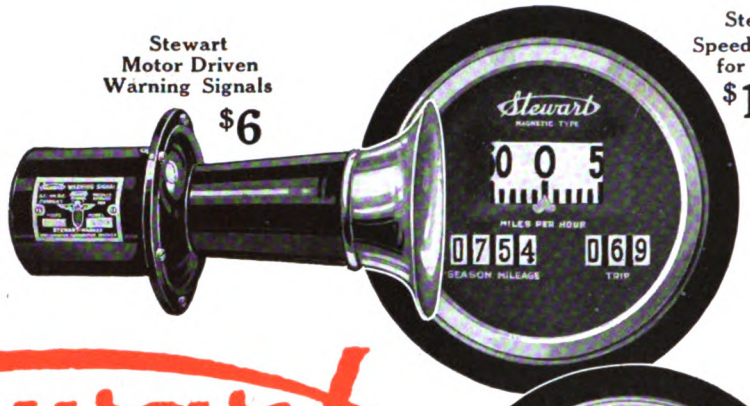
New York Show Headquarters—Biltmore Hotel

Editorial Contents—Page 3

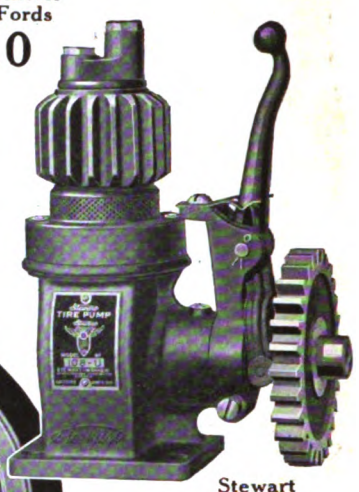
Advertisers' Index—Next to Last Page

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Stewart Motor Driven Warning Signals $6

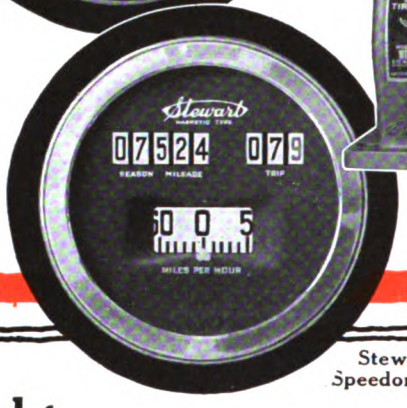


Stewart Speedometer for Fords $10



Stewart Tire Pump $12

Stewart Products



Stewart Speedometer $25

Start the New Year Right

Make 1917 your banner year! You can do it if you get started right.

Determine now to sell nothing but advertised goods—accessories of known value with a reputation and record for service. Eliminate from your line the accessories which demand so much sales effort. They cannot be profitable.

Successful retailing of automobile accessories depends entirely upon the brands you carry in stock. Accessories which have a quick turnover, and for which there is a big demand, are real money-makers. You really can't afford to handle any other.

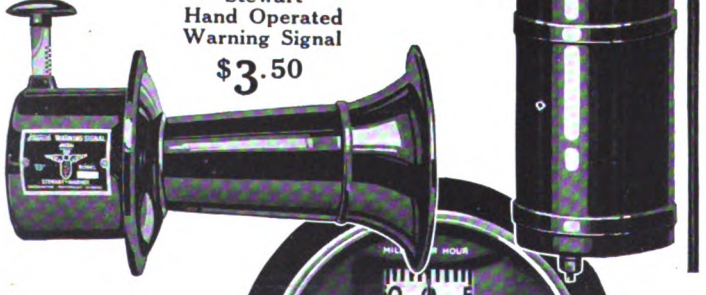
Look about you and note the successful merchants in other lines. In nearly every case you will find their success is due to featuring only advertised goods.

Stewart Products are leaders—a line that is standard, well-known and widely advertised. Stewart Products have a name and reputation second to none. That is why Stewart Products are the fastest-selling accessories today. This is the line you should feature and concentrate on for 1917.

Let Stewart Products help make 1917 your biggest, most profitable year. Start right now—determine to sell nothing but advertised goods—begin with a complete line of Stewart Products.

"It will pay you to see that every car is Stewart-equipped."

Stewart Hand Operated Warning Signal $3.50

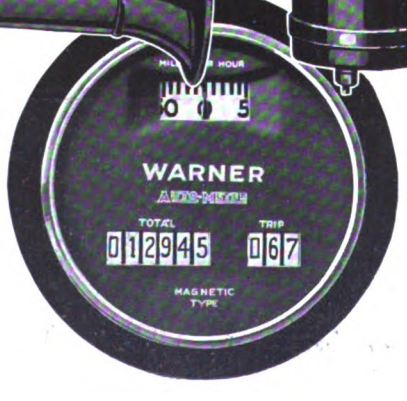


Stewart Vacuum System $10



Stewart PRODUCTS
PRESTIGE QUALITY SERVICE SATISFACTION
MADE IN USA

Warner Auto-Meter $50





Stewart Spark Plug $1

The Stewart-Warner Speedometer Corporation
Chicago, Illinois, U.S.A.

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Studebaker
Established 1852

WHAT THE GOLD CAR STANDS FOR

Nothing in recent years has proved quite so startling to the motor car industry as the famous Studebaker Gold Car, which is being exhibited at the 1917 Automobile Shows.

This veritable sensation is a Series 18 Studebaker, seven-passenger, six-cylinder touring car, with a Victoria top, finished in purest white enamel and 24-carat gold.

Yet, withal its splendor, its beauty of finish and great value, the Gold Car was not built as an exhibit to attract sightseers, but rather as a symbol of real Studebaker worth—exemplifying, as we could show in no other way, the quality, style and distinction of the Series 18 Studebaker line of motor cars.

And back of all that this sensational exhibit implies there lies the big factor of its advertising and selling value to the Studebaker dealer. It stands as a concrete example of the character of co-operation which Studebaker gives its representatives—co-operation that promises to make 1917 the greatest and most profitable year that Studebaker dealers have ever known.

Does such co-operation appeal to YOU?

STUDEBAKER

South Bend, Ind. **Detroit, Mich.** **Walkerville, Ont.**

Address All Correspondence to Detroit

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Sell FISK TIRES

Put yourself in line to take advantage of the unprecedented popularity of Fisk Tires and to cash in on that demand.

Fisk advertising gets the business for you; Fisk Quality keeps it. There was never a time in the history of tire making when business opportunities were as great as today for Fisk Dealers.



Trade Mark Reg. U. S. Pat. Off.
Time to Re-tire?
(Buy Fisk)

Write Dept. 23 for complete information about Fisk Tires and dealer proposition.

THE FISK RUBBER CO.
of N. Y.

Chicopee Falls, Mass.

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MOTOR WORLD
FOR DEALERS, JOBBERS AND GARAGEMEN

PUBLISHED EVERY WEDNESDAY

The Class Journal Co.
231-241 West 39th Street, New York City
Horace M. Swetland, President
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Detroit—95 Fort Street, West, Phone Main 1351
Cleveland—516-517 Swetland Bldg., Phone Prospect 167

Subscription, Per Annum (Postage Paid).....$2.00
Foreign and Canadian Subscriptions.....4.00
Single Copies (Postage Paid).....10 Cents

Postage Stamps will be accepted in payment for subscriptions. Checks, Drafts and Money Orders should be made payable to MOTOR WORLD.
The payment of subscriptions will be shown by stamping the date of expiration—the month and year—on the wrapper that carries your paper each week. No other acknowledgment necessary.

Cable Address, "MOTORWORLD," New York
Entered as second-class matter at the New York Post Office. Nov., 1900
Member of the Audit Bureau of Circulations

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The Class Journal Co.

Editorial Contents

New York's Greatest Show.....5-8
Bigger and brighter and better than any previous exhibit, it is drawing dealers by the thousands.
Trade Veterans Throng New York.....9-11
Here are some of the men who have made the motor car industry.
Comfort in New Bodies.....12-15
The new styles have dozens of comfort features never known before.
New Cars at the Show.....16-21
There are eight brand new cars and eight brand new models.
The Merchandising Spirit.....22-23
Mostly pictures which show what can be done with difficult spaces.
87 New Accessories Revealed.....24-32
The New Way vs. the Old.....33
Reilly takes a slap at the man who has not the initiative to doll up his show exhibit.
Winter Business Department.....34-35
Repairshop Short-Cuts.....36-37
Accounting and Business System.....38
Dealers Who Have Made Good.....39
A story about A. System Eldridge.
Angles of the Law.....40-41
Here is a summary of the garage lien laws of all the States.
Editorial Observation.....42
Questions and Answers.....43
Scientific Garage Construction.....47
With the Master Body Builders.....49-55
Six pages of pictures of the beautiful bodies at the Astor Salon.
Better Mechanics.....56-58
Repairs on the Borg & Beck clutch.
The Cleveland Show.....59-61
Regular News Department.....64a-64e
Motor World Guide.....64f-64g
Coming Events.....64h

Advertisers' Index on Pages 124-125

Here It Is—

A speedometer you can trust, not only for accuracy but for durability and reliable season around service.

See the
CORBIN-BROWN SPEEDOMETER
At the New York Show. Space D113

It was built for your kind of work. Built to stand the strain of rough roads and tell the truth under all conditions.

Automobilists recognize it as the standard speedometer equipment. And there is every reason that they should. Year after year it has justified the confidence placed in it by recording mileage accurately and steadily. You could ask nothing more of a speedometer.

The Corbin Company will occupy space D 113 at the Grand Central Palace Show January 6th to 13th and space 98 at the Gallery Coliseum, Chicago Show, January 27th to February 3rd.

Investigate this famous instrument
Sold and equipped by all dealers
Catalog on request



The Corbin Screw Corporation
THE AMERICAN HARDWARE CORPORATION, Successor
NEW BRITAIN, CONN.
BRANCHES: New York Chicago Philadelphia

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To All
ACCESSORY DEALERS



Co-operation:—The Spirit of the Times

In our last public letter we spoke of "Co-Operation."

What is Co-Operation?

It is friendly, helpful and timely advice in the conduct of your business.

We will dwell in this letter for a moment on the important matter of your Credits.

Good credit invites success.

Short accounts make long friends—

Collect up close—from that source you can pay your bills—the man who pays his bills gets the best prices, prompt shipment and trade favors that the other man doesn't.

DON'T

be afraid to ask for your money when due. The right-minded customer won't wait to be asked, or when asked gladly pays—that is the man you want. The man who has to be dunned and then gets mad is the man you don't want, for eventually he will stick you.

In our next letter we will offer suggestions helpful to the dealer on other important phases of the business.



Look for this emblem on the stationery of the houses you deal with.

The National Association of Automobile Accessory Jobbers

City Hall Square Bldg. Chicago, Ill.

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Vol. L New York, U. S. A., Wednesday, January 10, 1917 No. 2

New York's 1917

Greatest Motor Car Show

Seventeen New Cars and a Score of New Bodies are Revealed—Over One Hundred New Accessories —and Dealers by the Thousand to View Them

NEW YORKERS this week are witnessing the *greatest* motor car show. Nearly a score of new bodies, hundreds of new accessories and an era of prosperity make it the most important show the industry has ever seen.

Day and night Grand Central Palace is thronged. Monday a special train of Texas dealers arrived; every day more dealers from every city in the United States flock to the portals of the Palace. And with them come a horde of buyers. For money is loose this year, motor car production has been pushed to its highest point and there will be a flood of sales that will carry away every record.

New jobs, new colors, new finishes, wonderful new bodies in which every last need of the tourist or milady about town have been carefully thought out — that is what the show-going public wants to see. And that is what the show holds.

The newness starts right at the door. The first thing the showgoer sees is the new Buick six; to the right is the new Willys-Overland eight with a Knight engine and the new Overland four-cylinder model 90; just a little further back there is a new Dodge sedan; an eight-cylinder Chevrolet; and the wonderful Studebaker gold car; the Paige convertible roadster; the new Oldsmobile six; the Maxwells; the Cadillacs; the new Franklins; the Velies; the Cole with the very very first of the new four-door Springfield limousine bodies.

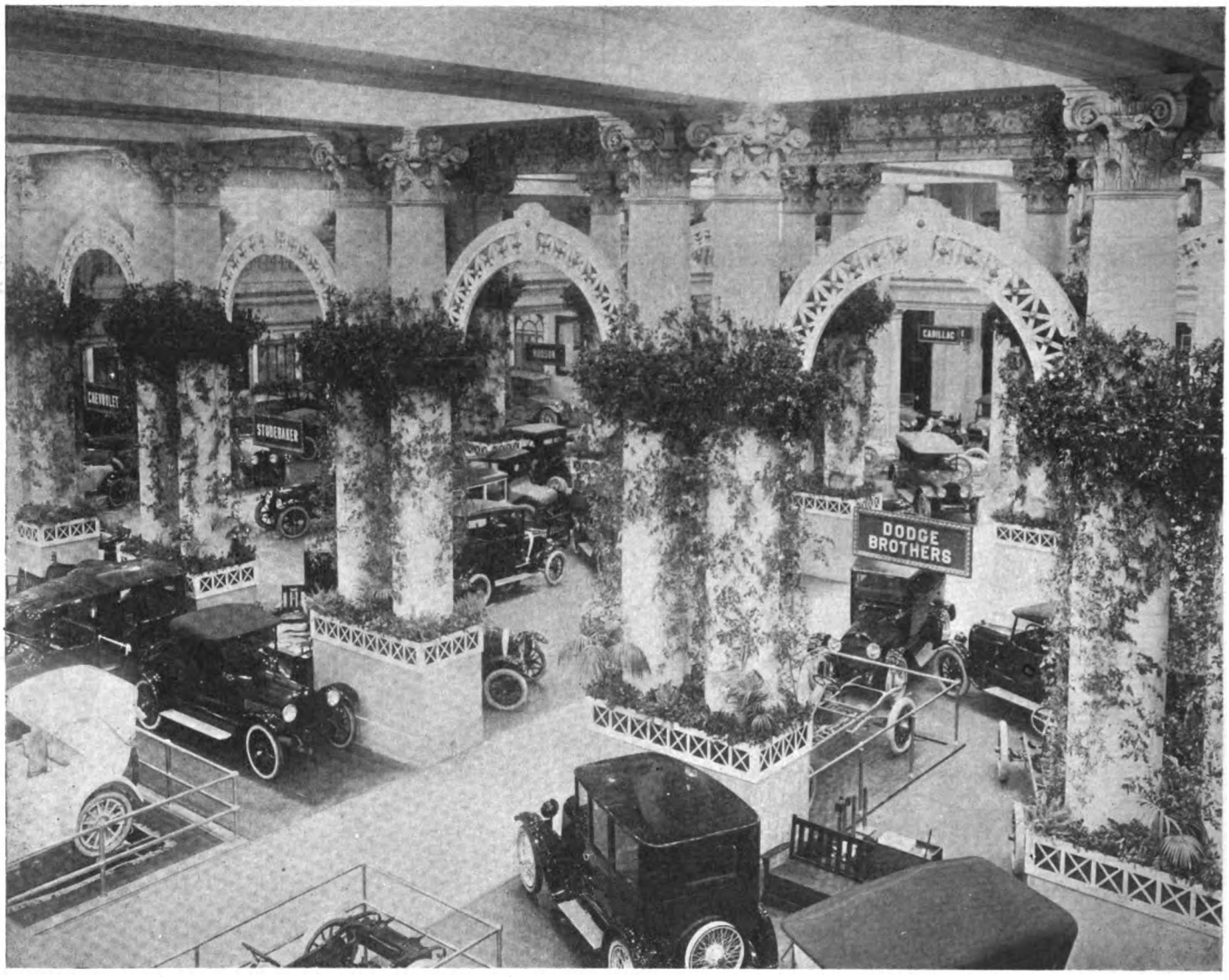
But this is only a hint; there is a wealth of newness yet to be revealed.

All this is why the show is the greatest, the most important; it reveals how much design can be improved, how

IN THIS ISSUE

	Page
Veteran Dealers Arrive	9
Master Body Types	12
The New Car Models	16
The Accessory Show	24
The Astor Salon	49

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Sam Miles, who manages the New York show, and who each year is burdened with working out a decorative scheme—and naming it—has performed his annual task. Grand Central Palace is a Temple of Flowers.

much that is really new can be developed in spite of the tremendous demand for production.

One-sixth of all the factories represented have brand new models, models that no one has ever seen before and few even suspected. Half of these again are brand new to the industry itself.

For example, there is the $595 Harroun which always has a crowd around it; the Doble steam car which has an even bigger crowd; the Murray eight; the Emerson four; the American six; the Columbia six which is the only car in addition to the Hudson which has the new radiator damper; the Ben Hur; and the much-heralded Dey electric that has a motor in which both the fields and the armature revolve.

Well-known makers who are there with new models are not quite so numerous though their products are every bit as interesting. Take the new Buick four and the big six just added with intake valves larger than the exhaust; and the Drexel with its sixteen overhead valves; and the new Scripps-Booth four; and the new Oldsmobile six; and the two new Overland jobs, the four and the Knight engine-Eight. And then there is the new McFarlan which has a magnetic transmission.

Few New Principles

The year gone by has not been a remarkable one for the development of new constructions by what may be termed old-line manufacturers. Of all these new models only four represent new principles. The McFarlan magnetic is a genuine surprise and introduces something new in the way of engineering. Here there is a magnetic device which takes the place of flywheel, clutch, gearset and lighting and starting equipment. Up to speeds of 20 miles an hour it is purely magnetic; above that speed, and presto! there is a mechanical drive with a positive connection between the engine and the rear axle.

Go further. There is the Doble steam car—the only steamer at the show and one of only two on the market, the other being the Stanley. The Doble burns kerosene and has its engine mounted on the rear axle; there is no clutch, no gearset.

Sixteen valves in a four-cylinder motor do not introduce an entirely new principle for the practice was pioneered in racing machines and now has been taken up by both Stutz and White, two of the most conservative builders. But when these valves are overhead in a stock model as they are in the Drexel there is something really new.

Adding all these new products to the others on the four floors of the Palace gives a grand total of 95 exhibitors of cars—the greatest number ever brought together under one roof. Last year there were 84 different makes of cars on view —11 less than now. And they are on all four floors of the building. This is the first time it has been found necessary to put them up on the fourth floor which heretofore has been saved entirely for

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the accessories, then they were crowded.

But the cars are crowding the accessories out. There are fewer this year than last year by 79. The 1917 show has a total of 227 separate exhibits; the 1916 show had 306. Still, few of the old, familiar products are missing and there is a horde of new ones.

Wealth of New Accessories

Seldom has there been so much real newness. Production evidently has not slackened inventive genius in this field. And most of these new items are strictly utilitarian; few are merely ornamental and few are purely luxuries.

Take the new Kelly wire wheel, for example, which is securely held in place without the use of threads, dogs or cams and will stay in place indefinitely even without a hub cap. Or the new Sparton vacuum gasoline fuel feeding system which is simplicity itself. Or the new Kellog engine-driven tire pump for Fords and Overlands. Or the new Perfection heaters for Packard and Cadillac; the new Corbin speedometer; the E. A. electric clock; the Hamilton Multometer which accurately keeps track of the mileage of each tire individually and of the mileage per gallon of fuel and lubricating oil; the Plunkett Gasometer which tells at a glance exactly now much fuel there is in the tank at any minute simply by pressing a button; the Superior wire wheels for Fords; and a hundred other devices described on other pages.

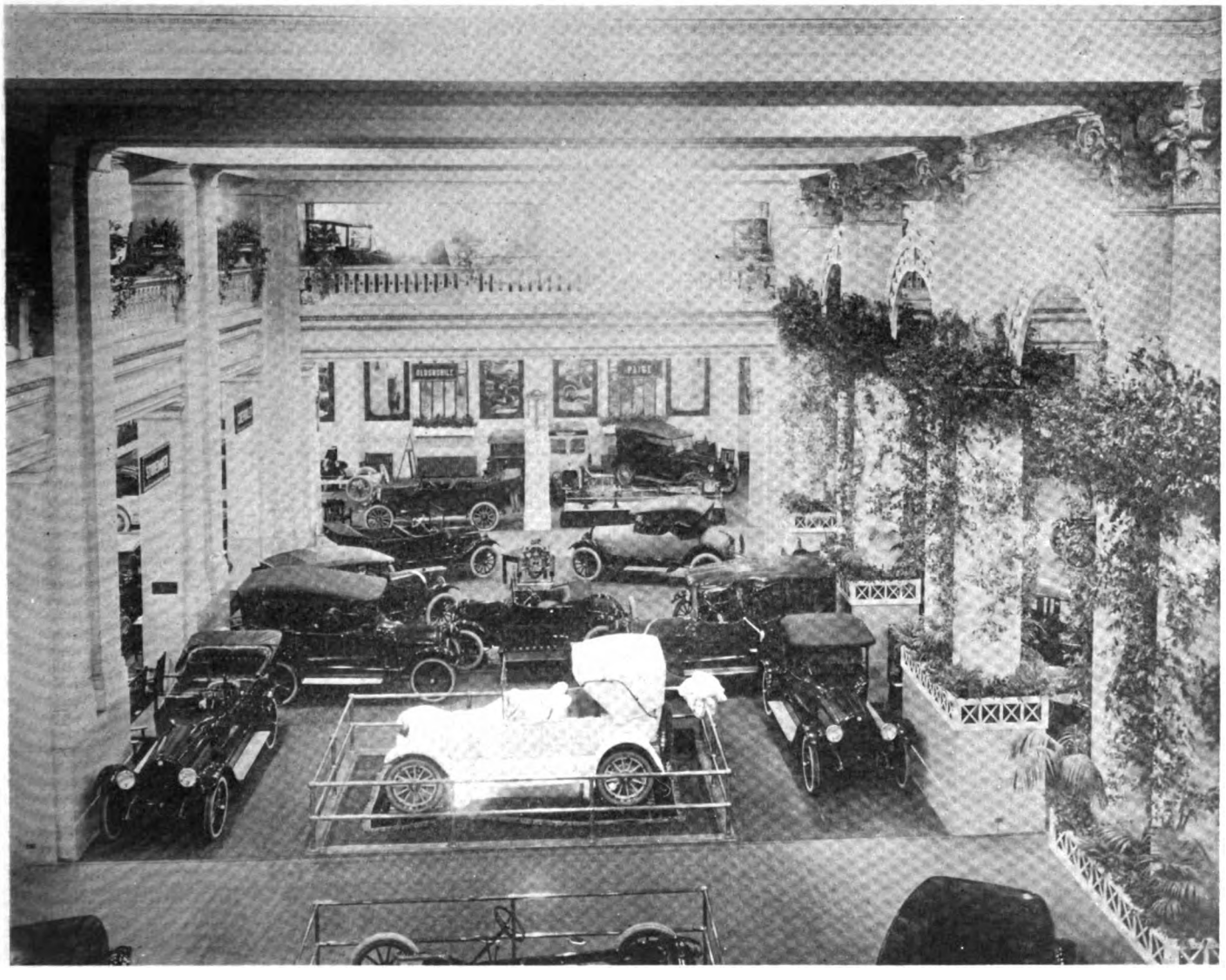
These are all on the upper floors, and on the lower floors there is a riot of new color. There are few exhibits that do not hold new models and few that have not these new bodies done up in bright colors to catch the eye. Incidentally, there is always a ready market for these special jobs, and any stock job can be turned into a special job by simply changing the color of the paint, adding wire wheels and a victoria top.

This is just what a number of makers have done. The Murray standard touring model, for instance, sells for $1,850. Add a special victoria top, wire wheels, a tonneau windshield, a special painting job in dark green, and the price automatically goes up to $2,000. Few persons would hesitate to pay the extra $150 in order to obtain the distinctive effect given by these changes.

Bright Colors Plentiful

Then there is a Hupmobile sedan, with a robin's-egg-blue body, a coffee-color top, special upholstery and wire wheels, that sells for $2,100; as a stock model it is $1,775. Saxon, too, has a special job, a white touring model with a victoria top and a few other extras that raise the price to $1,150, as against $875 for the stock car.

Pathfinder has the most radical type of standard body at the show. This is something entirely new. In it the top and also the spare wheels—two of them—are completely housed and out of sight. Paige has a new line of bodies, among



Thousands of vines, lattice work and flowers cover the bare walls and posts of the big building; and around the base of the posts there are miniature flower gardens. The accessory floors have the same scheme of decoration

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which is a convertible roadster finished in yellow; the rear seat folds completely out of sight, yet when open there is as much room in the "tonneau," if it may be called such, as there is in the average five-passenger tonneau. Big cupboards provide for gloves and goggles.

Saxon has sprung a real surprise by exhibiting its first sedan model—a body of the Springfield type in which all the windows disappear and the posts fold out of sight. It sells for $1,250 with cloth upholstery, and deliveries will be starting right through.

Detroiter has a detachable top job on a roadster selling for $1,470, and is making deliveries; Kline has a new shamrock roadster painted a brilliant canary-yellow; the new Monroe five-passenger job and the sedan are on view; Peerless has a dark green sport roadster without top or windshield that will be stock and sells for $2,250; Hollier has a new touring body on its six-cylinder chassis; Inter-State has one of the new four-passenger jobs done in yellow and in which the seats are high backed and give every appearance of thorough comfort; Briscoe has several special jobs, among them a Springfield type of body finished in yellow and having figured tapestry upholstery, and a touring model finished in violet and white; the new Dort sedan and sedanette bodies are there, the latter being a Springfield type; National has a beautiful line of new bodies in which the comfort of passengers has been well thought out, there being plenty of big compartments for touring comforts; Cole has the first of the new four-door Springfield convertible limousine models, a truly luxurious type; Chalmers has its line in which the upholstery has been designed by Lady Duff Gordon. And so it goes.

How big the attendance will be cannot be estimated. It is said that 50,000 persons passed the ticket takers on the opening night, and on Monday and Monday night the figures were not any less. It is certain that the dealer registration for the 1916 show, which reached the 3500 mark, will be eclipsed, though by how much cannot be guessed.

The Big-Business Show

That the New York show is a big-business show has been established in years gone by. And that this year will also be a big-business show is a foregone conclusion. Already dealers are reporting sales, and prospect lists are growing longer day by day.

The show is the great annual round-up of factory men—executives, sales managers, service managers and advertising men—and dealers from all over the country. And show week is packed as full of dealer meetings, breakfasts, luncheons and suppers as an egg is with meat.

Probably the most important meeting during the week is that of the managers of dealers' shows in the eastern part of the United States. This is to be held at noon to-day (Wednesday) at the Woodstock Hotel on West 43d Street, just east of Broadway. The managers will eat lunch at 12 o'clock and then will discuss the many problems which can be settled by a conference of show managers. It is probable that steps will be taken for the formation of a permanent organization.

The idea was first suggested by E. E. Peake, manager of the Kansas City show, who proposed that a half dozen show managers meet him at the Chicago show. E. V. Stratton, manager of the Albany show, then suggested a plan to hold a meeting during the New York show, and requested Motor World to issue a call for such a gathering.

One of the first to accept was Fred H. Caley, who manages the Cleveland show, and others who have enthusiastically supported the idea and signified their intention of attending up to the hour Motor World goes to press are: Charles D'Ossone, Philadelphia, who stated he was unable to attend but would send E. C. Johnson, his show floor manager; Harry T. Gardner, Syracuse, N. Y.; Claude E. Holgate, Newark, N. J.; Howard B. Chandler, Portland, Me., and a score of others.

Statistical Picture of the Show

	Garden and Palace 1913	Grand Central Palace 1914	Grand Central Palace 1915	Grand Central Palace 1916	Grand Central Palace 1917
Total Exhibitors	424	349	317	391	323
Car Exhibitors	89	78	80	84	95
Accessory Exhibitors	320	259	223	306	227
Motorcycle Exhibitors	15	12	14	1	1
Grand Total (Cars and Chassis together):					
Four-cylinder cars	202	162	126	116	120
Six-cylinder cars	112	116	134	135	143
Eight-cylinder cars	0	0	8	41	47
Twelve-cylinder cars	0	0	0	13	15
Electric cars	10	17	15	17	13
Steamers	0	0	0	0	2
Total	324	295	283	322	340
GASOLINE CARS					
Two-cylinder	0	2	0	0	0
Four-cylinder	169	132	96	89	89
Four-cylinder (piston valve)	0	1	0	0	0
Four-cylinder (sleeve valve)	6	8	10	5	5
Six-cylinder	86	98	105	116	125
Six-cylinder (sleeve valve)	4	2	1	0	0
Six-cylinder (crescent valve)	0	0	2	0	0
Six-cylinder (rotary valve)	1	1	0	0	0
Eight-cylinder	0	0	7	30	39
Eight-cylinder (sleeve valve)	0	0	0	2	0
Twelve-cylinder	0	0	0	9	14
Total Gasoline Passenger Cars.	266	264	221	251	272
Touring cars	162	143	124	117	128
Roadster	49	50	48	75	67
Limousine	23	15	18	11	16
Berline	8	6	2	1	0
Coupe	19*	17	7	6	6
Phaeton	1	2	1	0	0
Landaulet	0	1	1	3	3
Raceabout	2	2	3	2	0
Sedan and Convertibles	2	2	3	2	0
Town cars	0	0	4	5	12
Total	266	265	221	251	272
CHASSIS					
Four-cylinder	27	21	20	19	26
Four-cylinder (sleeve valve)	0	0	0	3	0
Six-cylinder	21	15	26	19	18
Eight-cylinder	0	0	1	8	6
Eight-cylinder (sleeve valve)	0	0	0	1	2
Twelve-cylinder	0	0	0	4	1
Total	49	37	51	56	54
ELECTRIC					
Coupe	7	2	1	11	8
Cabriolet	0	0	1	1	0
Roadster	3	1	3	1	1
Town cars	0	1	1	0	1
Limousine	0	0	1	0	0
Total	10	4	7	13	10

* Includes Cabriolet.
** Includes Two Touring Models with Detachable Tops.
*** Includes Fifteen Touring Models with Detachable Tops.

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Veteran Dealers Throng the New York Show

Trade's Old-timers Make Grand Central Palace Their Mecca in Annual Pilgrimage—All America Is Represented and Ancient History Is Bared

New York, Jan. 9—They have come from everywhere. Some of them have been doing it for years and some are new at this annual pilgrimage to New York's motor car show, which is the opening of the show season.

These who come are the dealers. There are factory men—it is true—they have to come. But the dealers come because they want to, because the show holds value to them in comparisons, in the settlement of problems with the factory and in the renewing of old acquaintances.

This army of dealers—which makes the big show possible—fills the hotels and throngs the show. Some are youths. Some have gray hair. But they all make up a big impressive army.

They do not come from near points, for a number are here from the Pacific Coast. And no one trade or field has a monopoly in contributing veterans to this youthful industry.

In the ranks of the dealers are ex-farmers, ex-bankers, ex-circus men, ex-livery men, ex-teachers, ex-bicycle men, ex-lumber men, ex-tobacco men, ex-newspaper men, ex-horse traders and ex-everything. But the characteristic of these "ex men" is that most of them are the cream of the trades from which they have come—and in the world of the motor car they have made good.

Ray E. Hollaway

Ray E. Hollaway, sales manager of the Du Broy Motor Co., Inc., San Francisco, is here. Hollaway has been in the motor business 17 years. He used to be a bank clerk but forsook that for gasoline and has sold the Locomobile steamer, Olds, two-cylinder Winton, the Popes, Royal Tourist, Franklin, Oakland, Hupmobile and Peerless and for the last three years represented the Hudson. Fourteen months ago the new Du Broy company was formed to handle the Saxon and in 12 months sold more than 1000 in northern California. The company is erecting a new building at California and Van Ness avenues, which will have 54,000 feet of floor. Despite his long career he is only 33.

J. D. Hardy

Another far distant traveler is J. D. Hardy, sales manager for the Ray Rose Co., which sells the Saxon in Dallas.

James V. Baldwin

James V. Balwin has come all the way from Los Angeles, where the Saxon Motor Sales Co., has been selling that car for a year and a half. Originally he lived in western Ohio but prior to selling cars was one of the largest real estate men in California. He has one of the finest showrooms on the coast.

W. B. Doan

W. B. Doan, who used to manage the Oldsmobile branch in Detroit, is at the show in the interests of the Saxon Motor Sales Co., Portland, Ore. He has been in the business for 12 or 14 years.

C. P. Brewer

Another Pacific Coast man is C. P. Brewer, Spokane, of the Brewer Motor Car Co. and the Saxon Motor Sales Co. of Spokane. Brewer used to run a business college and this experience has aided him during the year and a half he has been selling the Saxon.

E. O. Willebrands

Along with all these Pacific coast boys is E. O. Willebrands, Saxon manager on the coast, with headquarters in Los Angeles.

H. T. Irwin

Another fairly old timer is H. T. Irwin, of the Saxon Motor Sales Co., of Boise, Idaho. His first love was the Ford and his present love is the Saxon.

A. T. Hart

A. T. Hart, who sells the National in Boston, started in business in the mechanical department of the Stoddard-Dayton branch nine years ago and was with W. H. Stevens, the National dealer, until the latter gave it up in 1914 when Hart became a dealer for himself.

Charles Lord and Alexander Clark

Portland, Me., is represented by Charles Lord and Alexander Clark, of the National Sales Co. Clark, who is head of the company, was general manager of the Maine Motor Car Co. for eight years. Two months ago he and Clark set up for themselves. Lord originally was in the oil business in Ohio and Oklahoma and Clark used to be a bicycle salesman.

Samuel and George Grow

The principal thing at the show interesting to Samuel and George Grow, Boston's famous used car brothers, is how much they can buy some of the exhibited cars for a little later on. They have been buying and selling used cars for 12 years and have done well at it inasmuch as their previous business was trading horses.

I. L. Dimm

I. L. Dimm, who now owns part of the Dimm-Semmons Co., in Springfield,

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Mass., used to be a machinist in eastern Pennsylvania and went from there to the Stevens-Duryea factory. Three years ago he opened with the National agency.

A. C. Pollard

One of the real old timers is A. C. Pollard, who has been selling cars in Nashua, N. H., for about 14 years. He now handles the National and is said to be the oldest man on the Chalmers list next to James Levy, of Chicago. Like many another he is an old bicycle man.

K. G. Snyder

K. G. Snyder, of the National Pittsburgh Motor Co., has made a lot of money and is only 30 years old. His first business, and he still has it, was lumber. His friends say that everything he attempts is successful; they say that when he was a boy and his uncle used to give him nickels none of the rest of the kids would buy candy until they saw how much young Snyder got for his nickel, because he always drove a good bargain. He was a buyer for several lumber companies and about two months ago set up in the automobile business.

Fred J. Linz

Fred J. Linz has come all the way from San Francisco where he trades as the F. J. Linz Motor Co. He hails from somewhere about Dayton, Ohio, and has been in the automobile business about 12 years. After managing the Maxwell branch in San Francisco for several years he took it over for himself and in 1913 switched over to the National, which he still handles.

C. E. Larsen

C. E. Larsen started with practically nothing as a dealer five or six years ago, when he was less than 20 years old, and now has a prosperous National agency in Spokane as the Foster-Larsen Co. He was born in that section 26 years ago.

W. A. Kennedy

The hardware trade is represented by an ex-representative, W. A. Kennedy, Canton, Ohio, who saw the future in cars and began selling Nationals several years ago.

M. M. Eiseman

The cash register trade has contributed a graduate in M. M. Eiseman, who sells the National as the Eiseman Automobile Co. in Cleveland. He was a gold medal salesman for the National Cash Register Co. until 1907, when he went to the Olds branch in Cleveland and after two years secured the National agency and started a business of his own.

Charles C. Kelley

Charles C. Kelley is down from Troy, slightly gray but still young. He has been selling the Pierce-Arrow for 14 years between Poughkeepsie and Montreal as the Troy Automobile Exchange and, like many another Pierce dealer, has made money at it. Before selling cars he was a mechinical engineer and his machinery experience has left him in touch with many Pierce-Arrow prospects.

J. A. Maguire

J. A. Maguire is over from Boston reminiscing of the days when he sold Pierce bicycles in the hub and laid the foundation for his present Pierce business.

Walter Ellis

Walter Ellis, of the Ellis Motor Car Co., Newark, N. J., is only a short distance from the show and is there, of course. He was an old Pierce factory man whose services were recognized by giving him the agency in this prosperous Metropolitan adjunct.

A. A. Lederman

An old engineer is A. A. Laderman, who sells the Pierce in Syracuse and Utica. He worked on the first Pierce car that ever was built and has grown up with that business.

Archie Hughes

Archie Hughes, the Pierce dealer in Philadelphia, comes to the show in a rather novel position in that Foss, his partner in the Foss-Hughes Co., is in some respects his boss. Foss some time ago was drafted for service at the Pierce factory where he helps keep the industrial machinery running smoothly and properly.

Herman May

A dealer who is in the Pierce family in every sence of the word is Herman May, of the McCurdy-May Co., Pittsburgh. He is a nephew of Henry May, the vice-president and general manager at the Pierce factory.

John Van Benschoten

A great deal might be said about John Van Benschoten, who sells several different cars in the Hudson valley between New York and Albany with headquarters in Poughkeepsie. Van, as he is known to thousands, started years ago in a little one-man bicycle repair shop across the street from his now large motor car establishment. He used to be a bicycle racer in his younger days, but now travels mostly by squeezing himself into a Ford cabriolet.

W. A. Kirk

W. A. Kirk, New Haven, started in the garage and car business in 1909. Before that he had a horse livery business—and has it yet. He is the man who carts Yale students around New Haven and is sometimes paid for it. He sells the Marmon.

E. H. Craw

The printing business is responsible for E. H. Craw, who now circulates among dealers near New York City for the Studebaker Corp. He was with several printing companies years ago and is entirely unable to explain his transition when he went to the Studebaker's service station on Seventh avenue in 1908.

L. A. Cevasco

The tobacco business was unable to hold L. A. Cevasco, who sells the Studebaker, in Norwich, N. Y. He started wholesaling the filthy vegetable 10 years ago but sold this business last October and took the Studebaker agency. He also is a great musician, performing on the trombone.

Clark A. Sanford

The newspaper business did not do so bad when it turned out Clark A. Sanford, of Sanford & Jenkins, which sells the Studebaker in Margaretville, N. Y., up in the Catskill mountains. He still is editor of the Catskill Mountain News—out every Thursday, $1 a year. Among his other claims to fame are a former deputy secretaryship of state and six feet two inches of height.

A. K. McLuny

A. K. McLuny, who sells the Studebaker in Utica, used to be Studebaker branch manager in Detroit and has dabbled in gasoline for 10 years. He is known as a good organizer and a clever advertiser.

J. Frank Sharp

They say that exhibiters want to look out for J. Frank Sharp, who hails from Ogdensburg, N. Y., because he will trade anything for anything and make money at it. He used to be an implement man before he took on automobiles and is said to sell cars for horses, wagons, sheep or anything else the purchaser has—but always on Sharp's terms.

G. F. Waight

There sure was some reminiscing when G. F. Waight arrived from Binghamton, where he manages the La France Garage Co., a Studebaker dealer. Years ago he used to be a musician and hasn't forgotten it all yet. For a number of years he was in Barnum & Bailey's band, has played for Edison records but for 11 years has helped sell cars.

Howard Schussler

Howard Schussler, of Pittsburgh, also sells the Marmon. He was a salesman for three years before setting up for himself.

W. C. Watrous

They say that every time Glenn Curtiss, the aeroplane man, sees W. C. Watrous, the Marmon dealer in Buffalo coming down the road, Curtiss proceeds to rise in the air and stay there until Watrous disappears for Curtiss has bought seven Marmons from Watrous and, outside of two that he gave away, has all of them yet. He served his apprentice-

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ship selling Fords in Jamestown and graduated to the Marmon a year ago.

Howard Wagner

No one can remember the history of Howard Wagner, of the Binghamton Motor Car Co., Binghamton, N. Y., prior to the time he was connected with Wyckoff, Church & Partridge in New York.

Harold T. Birnie

Harold T. Birnie, who now distributes the Marmon in Mount Vernon and Stanton, with headquarters in New Rochelle, claims to have driven one of the first cars New York ever saw—a Locomobile steamer in 1899. To drive it he had to get a boiler inspector's license from the police department. He had the license until his house burned down a short time ago and the license went with it.

E. J. Dimm

E. J. Dimm, who runs the Auto Shop Co., in Paterson, N. J., has had a varied experience. One of the first noteworthy things he ever did was to stroke the four of the Excelsior Boat Club which won the American and Canadian championship at Saratoga years and years and years ago. Then he was a salesman, covered the South for eight years selling hardware. Fourteen years ago he started with the Locombile steamer and successively had such winners as the curved-dash Oldsmobile, White steamer, Knox, Columbia and Stevens-Duryea. Two years ago he took on the Marmon and is greatly pleased with it.

George Mortensen

George Mortensen, service manager for Harold T. Birnie, New Rochelle, has been in the business as long as Birnie himself. Both of them date back to the days when New York's row was at Thirty-eighth Street and the whole world thought no one but a Frenchman could buy an automobile.

Robert Johnston

Robert Johnston, the Maxwell dealer in Wilkes-Barre, Pa., can go way back to the steamer days in his narrative.

Otto Conrad

Otto Canrad, of Conrad Bros. & Co., Scranton, is another old timer.

Harry Olewine

Harry Olewine, Hazleton, Pa., has been selling cars five years. He has the Maxwell now. His father was one of the old settlers in that section and Harry came up in the leather and harness business.

Arthur Fisher

The only farmer so far in this story is Arthur Fisher, who used to raise potatoes and other things near Selins Grove, Pa. After four years with the Maxwell he says he will never turn another furrow.

J. Scott Hurley and Sam Early

J. Scott Hurley and Sam Early are over from Philadelphia, which is only two hours away. Hurley has sold cars for years but Early got his start in the real estate business.

James M. Clark

An old timer, but not a dealer, is James M. Clark, sales manager for the National. He began with the Electric Vehicle Co. in 1900 and in 1902-3 was in Germany and France with foreign makers. He came home then and was with Pope until 1907, after which he rested for two years and developed so much steam that he went with the National in 1910 and has been going strong ever since.

W. A. Sellon

W. A. Sellon, supervisor of retail stores for the Chevrolet Motor Co., has ceased traveling among the fifteen cities on his beat long enough to take charge of retail sales at the show. Sellon has the fifteen retail branches under his direct supervision. Prior to his connection with the Chevrolet company, which has continued for the past 4 years, Sellon sold Cadillacs with I. M. Uppercu for 2½ years, and the 3 years previous to that was with the E. R. Thomas Co., Buffalo.

H. B. White

H. B. White, president of the H. B. White Corp. and Chevrolet distributer in Syracuse, is in town bubbling over with enthusiasm over the new $40,000 service building which he has just completed. Part of his experience was gained with the Ford Motor Co., for which company he was foreign manager for 6 years.

Arthur F. Ferriss

Arthur F. Ferriss, Chevrolet distributer in Utica, is at the show, as is A. G. Directorate, of the Junction Motor Co., Jersey City. One of the prominent New England Chevrolet dealers is Harry Starkie, Hartford, Conn.

From Pennsylvania

Pennsylvania is represented by quite a Chevrolet dealer contingent. There are James Henry and John L. Wetherill, Jr., of Wetherill & Henry, Chester, Pa.; Sam Alderfer of Southertown, Pa.; "Ex-Sheriff Ed" Krause, Allentown, Pa.; E. M. Hottenstein, who will sell 3000 cars this year in Lebanon, Pa.; R. H. Mulch, who has recently been appointed assistant sales manager of the Chevrolet Motor Co. of New York, and A. R. Miles, special representative.

From Montreal

Sunday evening, Jan. 7, a special car was attached to the New York train which took to the annual automobile show of New York between twenty and thirty of the principal dealers of Montreal. The party went under the auspices of the Montreal Automobile Trade Association and constitutes a record, and the numbers will be added to by others during the coming week. The party comprised Messrs. J. R. Marlow, Overland; J. E. Doane, Cadillac; A. E. Jones, Albion; W. Jennings, National Trucks; J. O. Linteau, Legare Auto, Ltd.; J. A. Fortier, P. T. Legare; L. A. Hart, White Motors; George Prigam, Westmount Motors; S. Latham, James Walker, Hardware Co., Ltd.; H. Paton and C. Hopkins, Canadian Fairbanks; Morse Co., Ltd.; J. Ernest Millen, J. McIntosh, W. Cheese, John Millen & Son, Ltd.; L. Royan and J. B. Calliere, H. W. Petrie, Ltd.; R. Aubertin, Cole and Paige; F. Pennal, Comet Motor Co.; Roy C. Fraser, Pennsylvania Tires; Mr. and Mrs. W. F. Girdwood, Girdwood Lamb Motors; L. Maheu, Maheu Saxon Co.; P. T. Morris, Mutual Motors, and T. C. Kirby, manager of the Montreal Automobile Trade Association.

From Sweden

Hans Osterman is here from Stockholm, Sweden. He handles the Minerva and is quite a road-race driver. He wants to find a couple of American cars for distribution in Sweden.

From Russia

Boris N. Nikiforoff is here from Russia on a similar mission. Nikiforoff isn't a stranger to America, however, for he spent some time here at the General Electric plant and other places, and has written several Russian magazine stories about the American motor trade.

From Argentina

Albert Fehling, of Fehling Bros., Buenos Aires, is another visitor from foreign countries. His firm has handled the Cadillac in the Argentine for 14 years and the Jeffery for 1 year. He is in search of town-car bodies which permit a chauffeur on the outside. He says sedan types don't go well in the Argentine, because many cars of that class are chauffeur-driven and the passengers don't care to ride with the driver.

From Texas

That famous Texas special train arrived Monday. It is on the same plan as the Spizzerinktum special which invaded the Chicago show last winter. It is a merry bunch of energetic Texans who maintain that the Lone Star State is a regular eater of motor cars and gets hungrier every year.

Joe Porter

Joe Porter, King dealer in New York, and who also holds an important position in the sales executive force at the King factory, is in town.

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Comfort Studied *in* New Body Styles

NINETEEN-SEVENTEEN body styles do not show any revolutionary changes. There is far better line blending, a more pronounced distinction between the rectangular and the cylindrical type of body, better treatment of the tonneau cowl, much more extensive provision of compartments for small touring comforts, and more complete equipment.

But with factories pushing production, designers have centered their attention on the perfection of details rather than on the evolution of new designs.

With but one exception designers have adhered to standard construction, this exception being Pathfinder, which has branched out into new fields and developed a body that is truly different. The distinctive feature of the body is that both the top and the spare wheels—two of them—are completely housed and out of sight. The top disappears into a closed compartment at the back of the tonneau, and the two spare wheels are housed in a revolving compartment beneath the back of the tonneau and adjacent to the rear axle. The same plan is used on both roadster and touring model; and a further feature of the four-passenger roadster is that there is a deep cowl which can be lifted, and this carries a windshield. The body is the modern molded type and, despite the housing of the top and wheels in the manner described, there is no effect of clumsiness.

Lines Are Slightly Changed

Among the general run of cars body lines have changed to some extent, and it is more apparent than ever that there are two styles of body designers. These may be classed as those who incline toward the rectangular in principle and those who incline toward a basic idea embracing the cylinder.

Another noticeable feature is the use of what in nautical language is styled a deadrise effect; that is, there is a long, continuous curve to the top body line extending from the windshield to the back of the tonneau, where it is highest.

In general, bodies are far more symmetrical in design and give a better impression of having been designed particularly for their purpose; there is less of the coach or carriage about them and more of the motor car. This evolution is most noticeable in the greater care given to molding lines, the more general use of double-cowl effects, more careful fitting of fenders, and better proportioning.

Body High Spots

The Rectangular Type
The Cylindrical Type
The Deadrise Effect
More Line Blending
Small Tonneau Cowls
Big Comfort Cupboards
Hidden Auxiliary Seats
Better Fitting Fenders
Four-passenger Roadsters
Springfield Type Bodies
Satin Finished Styles
Special Show Jobs

Cowls Noticeably Improved

The most noticeable change in the modernizing of bodies appears at the cowl and at the back of the front seats. The tapering hood, generally with a more or less pronounced slant toward the radiator, is common, and has had a pronounced effect in improving appearance. The use of a small cowl at the back of the front seats is much more common than for 1916; and whereas this generally assists in giving the body an appearance of greater completeness, the degree with which it improves appearance depends entirely upon the method of treatment.

These two features are used on both the rectangular and the cylindrical type of body, and are quite capable of excellent treatment in either. In the rectangular style body lines at the sides are practically vertical and there is the general effect that the body has been developed from a rectangular form; lines are square and corners are sharp, as are curves where they are used. The cylindrical form, on the other hand, gives the impression of having been developed from a cylinder, the side body lines bulging slightly from the frame line to the top line, the cowl being a continuation of the curved effect and the hood merging into the general scheme.

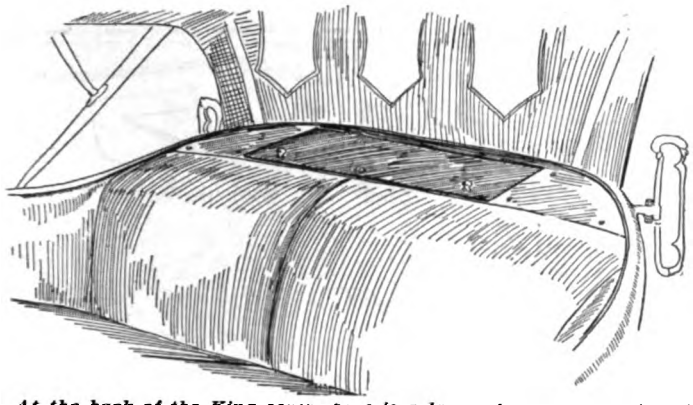
Some Rectangular Types

There are a number of examples of both types in which there is no mistaking the intention of the designer. In the rectangular type, for example, there are the Scripps-Booth, which was among the first of the kind; the Liberty, one of the latest and most pronounced examples of this type; the Regal, the Lozier, the Enger, Crow-Elkhart, McFarlan, the Columbia, another newcomer, and others. One of the Abbott bodies is a sort of combination of the two ideas.

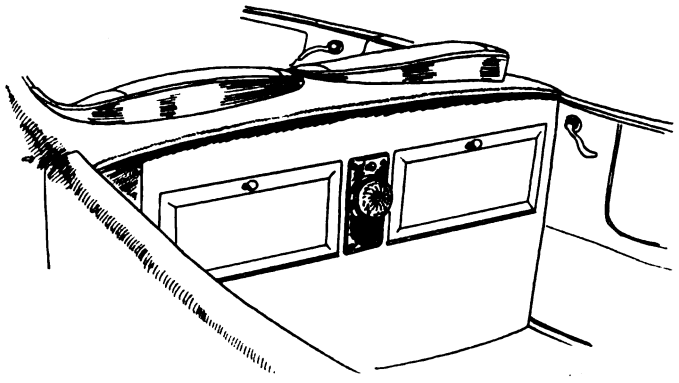
The cylindrical type is well shown by the Marmon, the Apperson, in which the effect is particularly pronounced; the Premier, Moline-Knight, Marion Handley and several others.

Individual treatment of these two general types varies. In some of the rectangular type of bodies there is a severely square-top body line which accentuates the principle; and in others there is a smoothly rolling-top line that somewhat softens the effect. In none of these is there any molding; in fact, molding appears to be disappearing except in a few cases, a prominent exception being

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At the back of the King seats there is a large storage compartment for touring necessities



Two more cupboards at the back of the front seats in the King provide for goggles and gloves

the new Chevrolet eight, which has beautifully finished mahogany molding. The demand for simplicity has been largely responsible for the elimination of molding.

Blending the Engine Hood

With the addition of tonneau cowls the forward cowl is being made more than ever a mere continuation of the engine hood. In the majority of cases a straight line can be drawn from the top of the radiator to the bottom of the windshield, and will touch both the hood and the cowl at all points.

There has been a big change in the treatment of the back of the front seats. There are few cars in the popular-class field that do not have a double cowl or in which the front seats are not carried above the body lines; in a great many cases these seats are literally molded into the body, there being a miniature deck at the sides and directly behind the seats. In fact, this treatment of seats appears to be displacing the actual cowl, which when first developed closely resembled the front cowl and extended out some distance into the tonneau.

The new cowls extend but little, and are intended rather to give a finished appearance than to be of a practical value in so far as affording a measure of protection is concerned. Beneath these miniature cowls there has been a big change in practically every car except the very lowest priced. This is the use of mahogany or walnut compartments in place of the usual leather-covered back.

More Comfort Compartments

In seven-passenger cars these compartments naturally serve to house the auxiliary seats, and where the seats do not take up all the space there are generally a couple of smaller compartments which will serve a useful purpose in housing touring accoutrements, such as goggles, gloves, route books, etc. In a number of instances—Mercer, for example, and some others—there are sliding doors operating like a roll-top desk, and in others the doors are beautifully figured walnut or richly stained mahogany. In the Majestic the central door lifts up to form a table, and at the sides there are two compartments holding Thermos bottles.

Even where the auxiliary seats are not hidden in such compartments they are far better cared for than ever before. For the most part they fold neatly into recesses in the back of the front seats, an excellent example being the Hudson.

The slanting windshield pioneered by Mercer has become quite common, though Mercer continues to slant its shield at a sharper angle than any other. At the same time shields in general fit the bodies better, and the increasing use of overlapping upper glasses is noticeable. The need for providing ventilators in bodies is overcome by making the lower half adjustable to direct a current of air into the driver's compartment.

The crown fender which last year came into prominence is practically universal, and a more important feature is that fenders fit the wheels better and thus are better able to do the work for which they are designed.

Roadster Types Increase

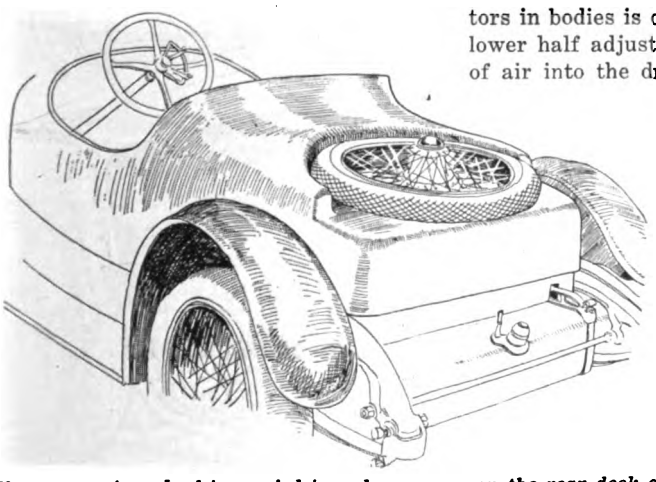
The year gone by has seen a great increase in three- and four-passenger roadsters and in the Springfield type of body and the detachable top. The once usual type of two-passenger roadster is the exception, whereas it was the rule; and from the three-passenger job, originally styled the cloverleaf, there has been developed the four-passenger, which bids fair to take the place of the other two.

One feature of the evolution of these types is the greater use that is being made of space which heretofore has been wasted. Between the sides of the rear seats and the body proper it is now common to find commodious pockets, and in a number of cases there are mahogany or walnut inclosed compartments provided with lock and key.

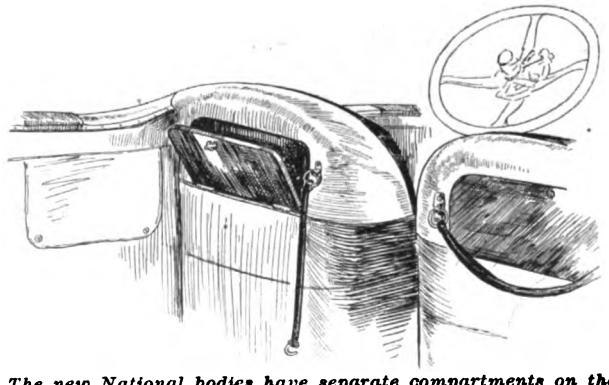
The Springfield type of body has increased greatly in popularity, as has the detachable top pioneered by Kissel. Both are altogether logical types and are selling quite as freely for summer use as for use more particularly during the winter.

Bright Finish Preferred

The popular demand appears to be for brightly varnished surfaces; and though most of the cars on view are finished in this way, there are a number which have

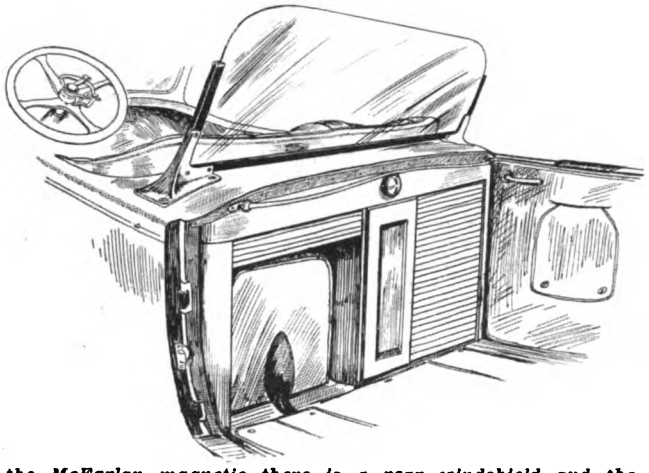


The spare wire wheel is carried in a deep recess on the rear deck of an Empire roadster

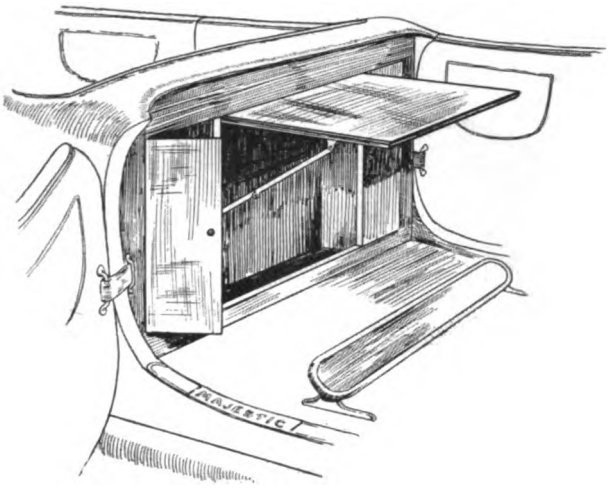


The new National bodies have separate compartments on the backs of the front seats

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On the McFarlan magnetic there is a rear windshield and the auxiliary seats are completely housed



This shows the neat little mahogany table that folds to make a compartment on the Majestic

the satin finish which is such a prominent feature of the salon at the Hotel Astor. Body builders of the first rank state that the semi-dull finish is the more durable and in time will become popular, but in the meantime the bright finish is in biggest demand.

Colors are not changing much; with big productions standardization is essential, and dark greens, blues and blacks still are most popular. Some makers specialize in giving a number of optional color schemes, though the number is small. Nevertheless, there is no denying the distinctiveness which comes of a special color job, and where factories are not equipped to do this work a growing trade is being worked up by some of the bigger dealers.

Some of the Special Jobs

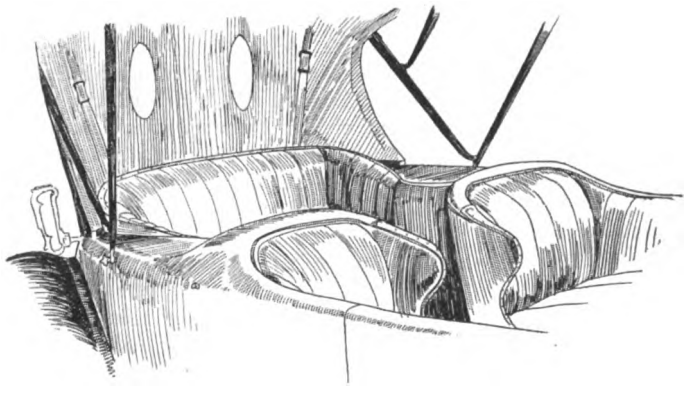
The use of smooth upholstery, another feature of the Astor salon, is not to any extent general among stock jobs, the usual tufted variety being supreme.

There are a number of special jobs which are distinctive because of their color schemes, their unusual design or their comfort features. Among these there are the new Pathfinders, which have been mentioned. One odd model is a Murray roadster with a polished aluminum body and individual oval windshields. This is of the hydroplane type.

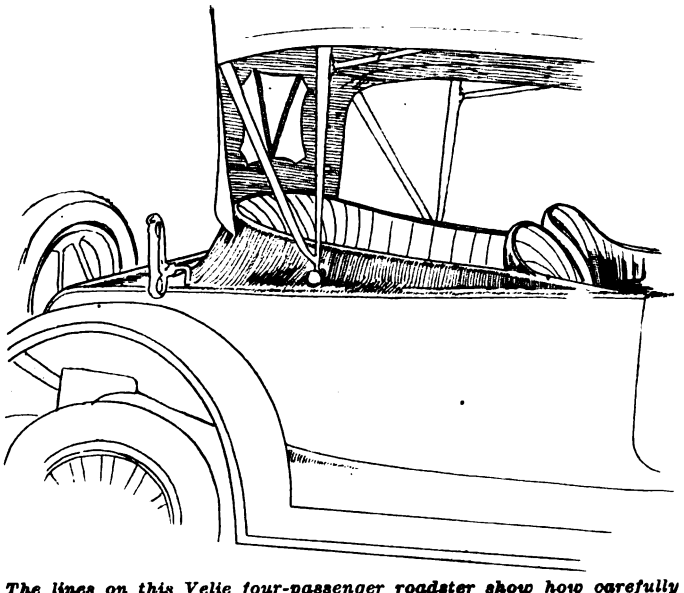
An excellent example of what can be done with a stock model by way of giving it a distinctive appearance and greater appeal is a Saxon touring model. This is finished in a special shade of cream with a gold stripe and natural wood wheels; there is a Victoria top and slip covers. With this equipment the price is $1,150, whereas the standard stock job sells for $865. A Hupmobile job is a sedan done in robin's-egg blue and coffee, with imported cloth upholstery and wire wheels; as a stock job it is $1,775, and in this special form it is $2,100.

Kline has an attractive shamrock roadster finished in bright yellow with black leather upholstery and running-gear. The treatment of the back of the rear seats is especially attractive, and is best brought out by the illustration herewith.

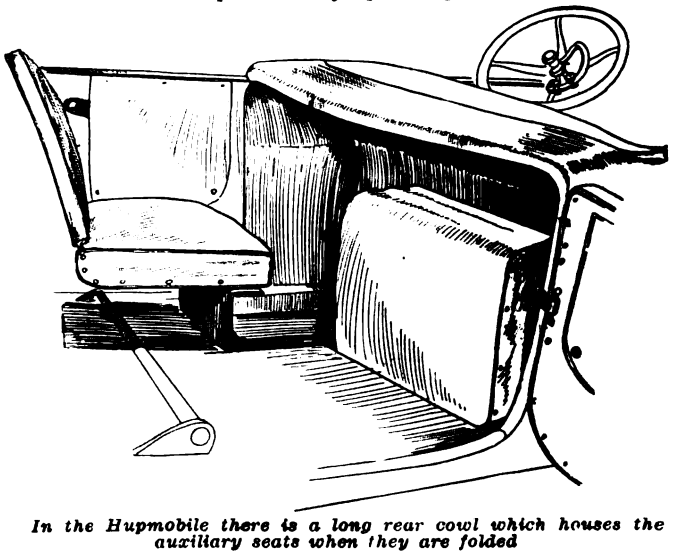
The new Premier, which is one of the few to appear with a satin finish, is a particularly pleasing example of the



Note the "wings" at the sides of the seats in this four-passenger roadster. It is an Elgin

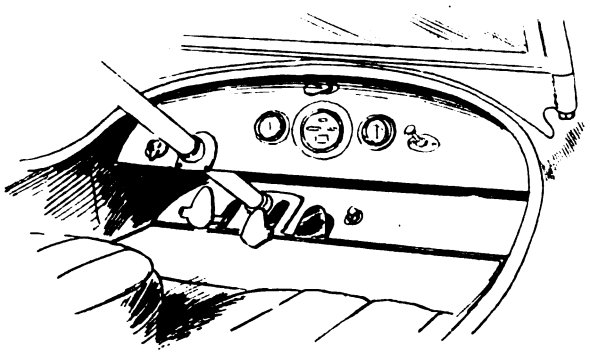


The lines on this Velie four-passenger roadster show how carefully some bodies of this kind are designed

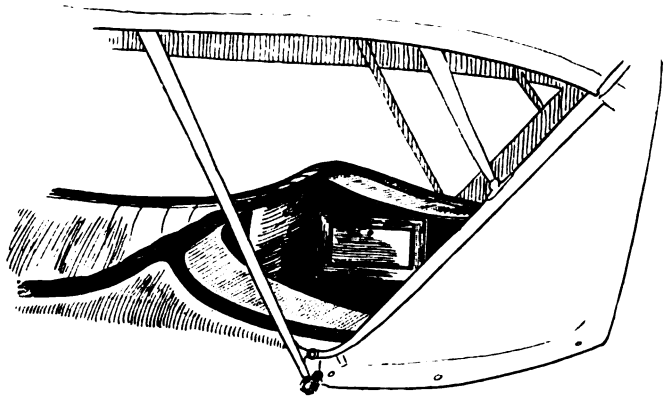


In the Hupmobile there is a long rear cowl which houses the auxiliary seats when they are folded

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The new Chevrolet eight has an unusual type of accelerator pedal designed for the driver's comfort



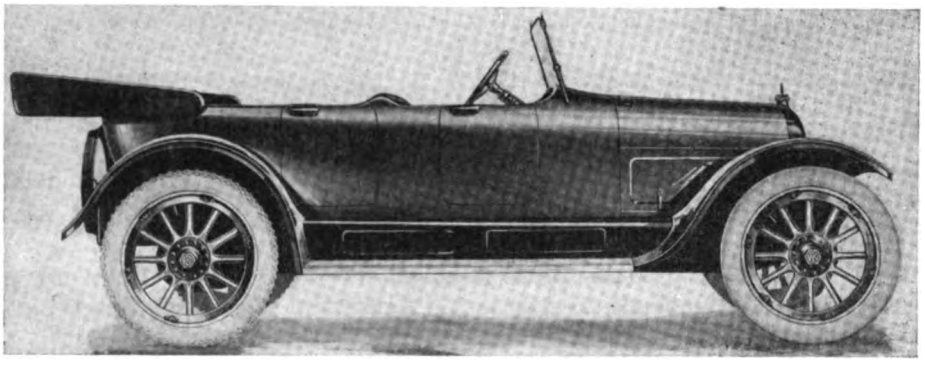
And here is one of the two compartments in the back of the four-passenger Chevrolet eight roadster

cylindrical type of body, the lines being well blended and giving an undeniable effect of unity. The two Cunningham models both are quite out of the ordinary and have a molding belt running around the body. One has no running-boards and is finished in a truly luxurious manner, the woodwork at the back of the front seats being circassian walnut; there are several compartments for odds and ends.

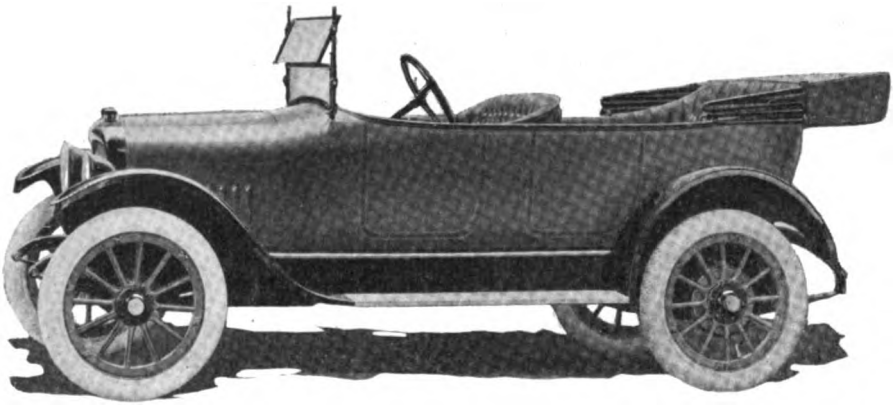
Stutz, as usual, has a roadster model which would attract attention anywhere. It is finished in bright canary-yellow and the extra wire wheel is made to fit into a beautifully molded recess in the rear deck. Empire has a model quite similar to this and finished in the same color.

Paige has one of the most distinguished-appearing town cars on view. This has a pointed and slanting windshield with individually adjustable glasses, the shield being molded in place and having an altogether distinctive effect. The body is finished in yellow, with a dark green top and wire wheels and black running-gear; the upholstery is figured tapestry.

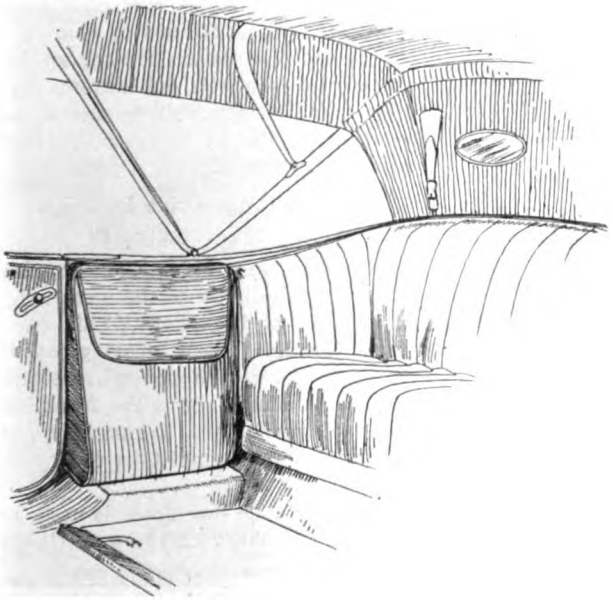
Cole has its new Tourcoupe, a Springfield body mounted on a close-coupled four-passenger body and finished in a special yellow and black; the price is $2,295.

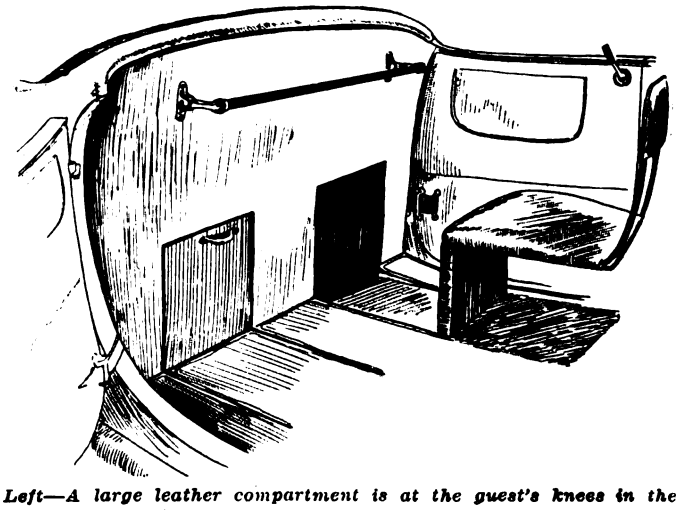


The Willys-Overland company saved up a real surprise in the form of this eight-cylinder Knight engined job



The Allen Classic model is one which exhibits what in nautical language is styled a deadrise, lower in the center body lines than at the ends





Left—A large leather compartment is at the guest's knees in the new Pathfinder bodies. Auxiliary seats fold tightly into a recess in the new Hudson and are completely out of the way

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New Cars
Bateman
Ben Hur
Columbia
Dey Electric
Doble Steam
Drexel
Majestic
Puritan

Eight New Cars and Eight New Models Unveiled

New Models
Buick
Chevrolet
Enger
McFarlan
Oldsmobile
Scripps-Booth
Pullman
Willys-Knight

THERE are eight brand new cars at the show; in addition there are eight more which are displayed for the first time, though details of their design and construction already have become public.

Of the eight new models, only four embrace principles which are to a large extent new, all the other models being standard in construction and displaying little that is new from an engineering point of view for the reason that they are largely assembled jobs.

The models which are really new, not alone in construction, but in design as well, as are the Bateman, which has a unique form of front drive construction, the McFarlan, which has a new type of magnetic transmission, the Drexel four, which is in two models, one with sixteen overhead valves and the other with eight overhead valves, and the Dey electric.

Other new models which have not been previously exhibited, but which are not so radical in construction, are the Oldsmobile six, Enger four, Columbia six and Ben Hur. The Scripps-Booth four, Buick big six, Overland model ninety, Willys-Knight eight, Doble steam car, Majestic, Pullman and Puritan are exhibited for the first time.

THE McFarlan magnetic six is a complete surprise. Except for the fact that its clutch and gearset are eliminated and their places are taken by a combination of centrifugal and electric transmission produced under the Vesta patents, the chassis is a standard McFarlan job. The electric transmission eliminates the usual separate electric lighting and starting system in addition, and concentrates the control of the car in a series of buttons mounted on the steering column.

There are three principal units in the Vesta transmission, the equipment being marketed by the Triumph Electric Co., Cincinnati. These units are a dynamo, a speed compound and an automatic controller. The transmission provides for a positive connection between the engine and the propeller shaft only after speeds above 20 m.p.h. are reached. At lower speeds the car is driven by magnetic connection.

In the installation the armature of the dynamo is keyed to the engine shaft and takes the place of the flywheel. The field is a rotating unit and is connected to the propeller shaft. At speeds below 20 m.p.h. magnetic attraction between these units serves to drive the car through what is an ordinary magnetic clutch.

The speed compound, which is mounted directly behind the dynamo, consists of a case containing a planetary gearset, the hole ordinarily rotating as a unit with the propeller shaft. The gears are constantly in mesh and do not move on each other except for obtaining a very low speed and for reverse. The planetary unit serves both for low speed ahead and for reverse, the control being through buttons.

How the McFarlan Operates

In operation the sequence of events is as follows:

1—The engine is started by inserting an ignition key and depressing the starter button. This causes the dynamo to act as a motor and crank the engine, and also operates a magnetic locking device which holds the propeller shaft and prevents the car from running backward.

2—A second button, marked "Run," is depressed, establishing a connection which leaves the mechanism in a position to drive the car when the accelerator is depressed. Depression of the accelerator closes a switch energizing the fields of the dynamo and giving the magnetic attraction for driving.

3—For heavy pulls the reduction between the engine and the propeller shaft can be increased through the planetary gearing by depressing a button marked "Low." The planetary transmission is thrown out of action without jerk or loss of momentum by releasing the "Low" button.

4—When the speed of the car on level roads exceeds 20 m.p.h. the magnetic transmission ceases and the drive becomes frictional, due to centrifugal force pressing the brushes against the commutator with sufficient force to form a driving connection.

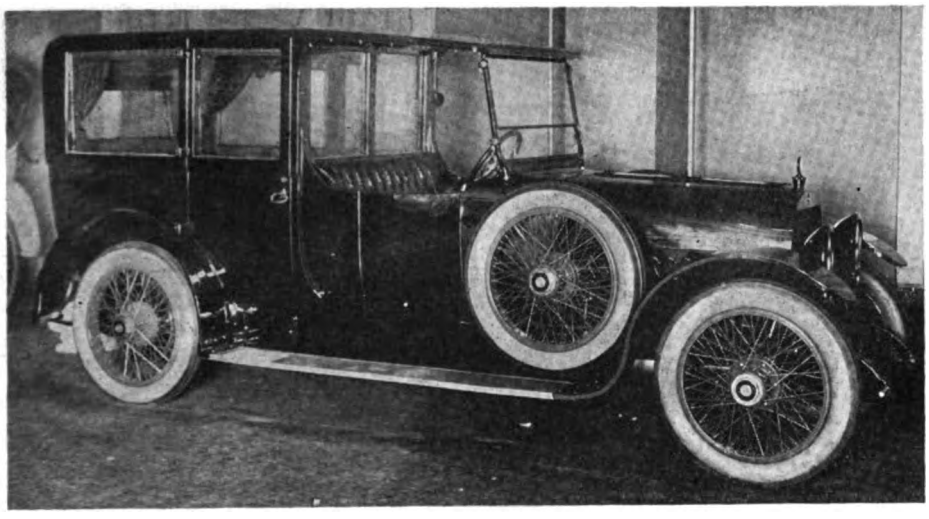
Under ordinary running conditions at speeds below 20 m.p.h. the current generated by the difference in rotative speeds between the armature connected to the engine and the fields connected to the propeller shaft is utilized to charge the storage battery. When the car speed is reduced the magnetic pull automatically assists the friction pull to again raise the speed to the point where the drive becomes mechanical.

Bateman Front Drive Is Unique

The Bateman car, which is produced by the Bateman Mfg. Co., Grenloch, N. J., probably presents the most unique construction at the show. This car is driven through worm gearing at the front end, the engine and gearset being mounted as a unit above the front axle, which is a live design. Transmission elements include the usual type of dry-disk clutch.

For power a Le Roi motor is used, and this drives a shaft carrying a Hindley

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In external appearance the new McFarlan magnetic transmission car does not differ from the usual models, though it is minus the usual clutch, gearset and lighting and starting system, the place of all being taken by the new mechanism

worm which meshes with a worm wheel floating on the differential housing. From here the various speed reductions are obtained through the usual gearbox, which is mounted across the front of the car below the worm gearing.

The shafts which drive the car are inclosed in a live axle, with the weight carried on a dead axle. There is a universal joint at the point where the driveshaft leaves the gearbox and another at the point of connection to the front wheel.

The body on the Bateman is altogether orthodox in design, and there is nothing out of the ordinary in the chassis except in so far as concerns the front drive.

The gearshift and emergency brake lever are long rods entering the dash at right angles and extending on either side of the steering column. The manufacturers claim that the front-drive principle gives a gain in propulsive efficiency, a reduction of skidding owing to the trailer action of the rear wheels, a reduction of unsprung weight, a gain in accessibility, free coasting, increased clearance, higher tractive effort and the advocation of the driving power in the line of travel.

Drexel Has Sixteen Valves

The two Drexel chassis which are on view and are exhibited by the Drexel Motor Car Corp., Chicago, resemble closely the Peugeot racing type, due to the use of overhead camshafts. One of the motors has twin overhead camshafts operating four valves to each cylinder, and the other has a single camshaft mounted in much the same way. The shafts are driven by chain, which is stepped up from the crankshaft to an auxiliary shaft from which the magneto, oil pump and fan are operated, and then through an idler sprocket to the camshaft. The manufacturers point out that the use of four valves per cylinder permits an increase in valve area of 69 per cent, in addition to permitting the use of lighter valve springs and valves and thus reducing valve inertia. A particular feature of the motor is that the entire chain drive is accessible and simple adjustments are provided for taking up wear and stretch.

Both the engines have 3½ x 5 cylinders cast in a block, with gray iron pistons and I-beam connecting-rod. Engine accessories include Bosch magneto, Bijur starting and lighting, and Stromberg carbureter. Cooling is by thermo-syphon, and lubrication by a combination of force feed and splash.

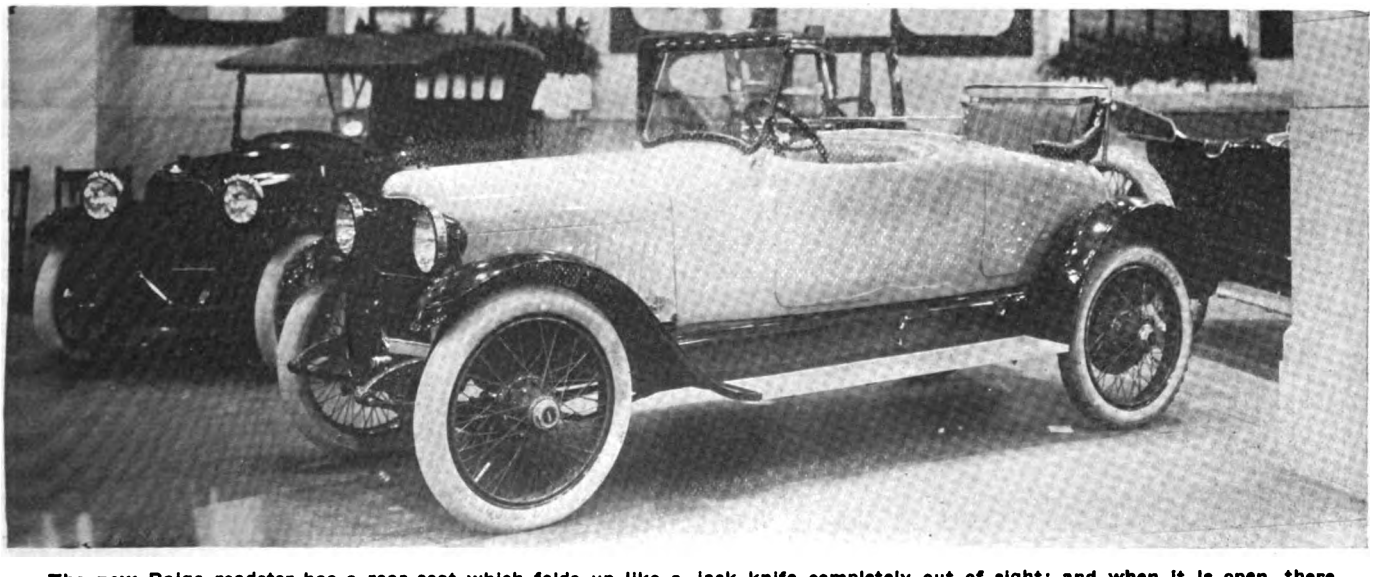


Spare wheels on the Pathfinder are completely housed under the body

Enger Has a New Four

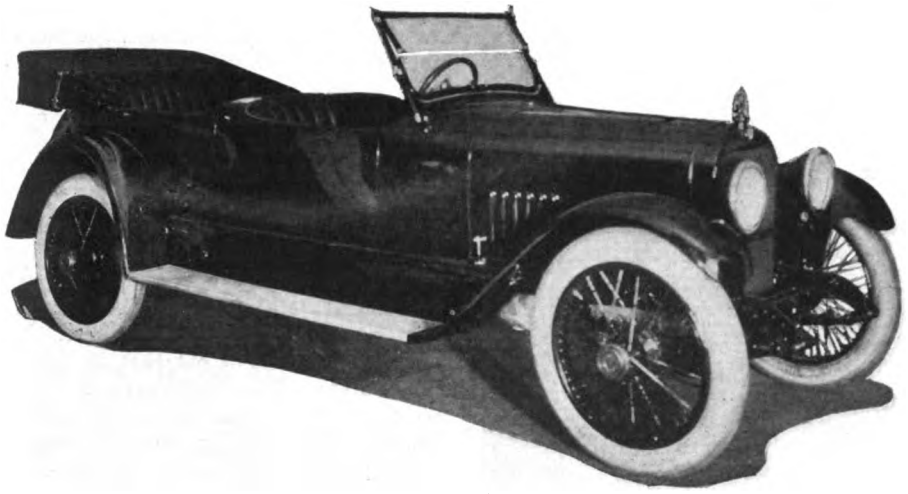
The Enger Motor Car Co., Cincinnati, has added a $695 four-cylinder running-mate to its twin unit six, the latter being distinctive because of the ability to convert the motor instantly from a six to a twelve, or vice versa. The new four has an overhead-valve 3 11/16 x 4⅛ motor, the engine, clutch and gearset being a unit. Ignition is by the new Atwater-Kent close-circuit system, and there is a double-unit electric lighting and starting system. Gasoline feed is by Stewart vacuum system.

In the transmission elements there is a leather-faced cone clutch with adjustment springs which are accessible with-

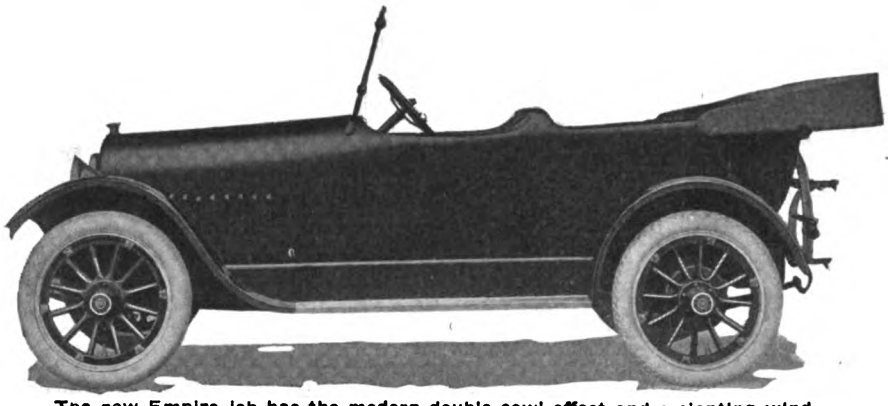


The new Paige roadster has a rear seat which folds up like a jack knife completely out of sight; and when it is open, there is as much room in the tonneau as in the average five-passenger car

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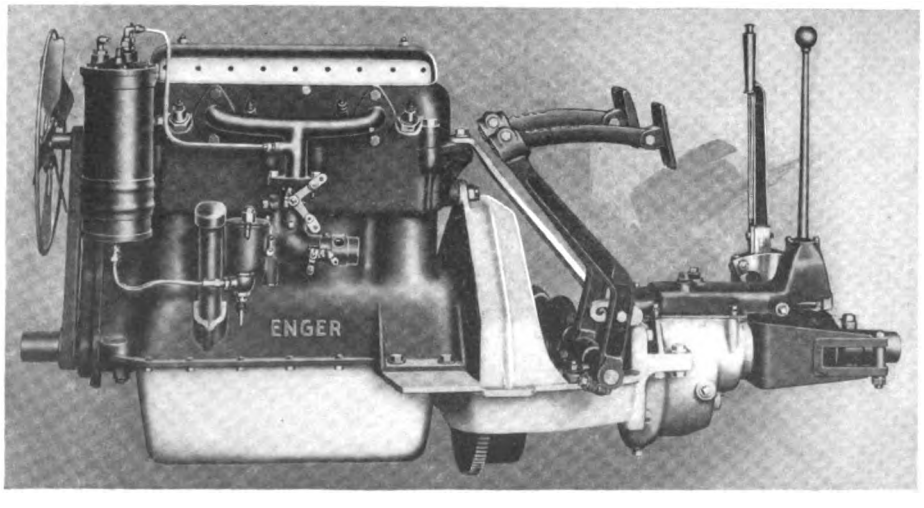
The characteristic low, rakish lines of the Mercer are accentuated by the extreme tilt of the windshield, of which Mercer is the pioneer



The new Empire job has the modern double cowl effect and a slanting windshield; note the smooth lines



The new Enger four is a sightly creation with the modern smooth body and a slanting windshield



To the Enger twelve there has been added a new four which is powered with this motor; the open flywheel gives ready access to the clutch

out removing any cover plates. The gearbox, though mounted as a unit with the motor, has also the advantage of central location, thus giving a comparatively short propeller shaft. The drive is through a single universal and inclosed propeller shaft to a bevel gear axle. The wheelbase is 106 in. and tires are 32 x 3½.

Oldsmobile Adds a Six

The Olds Motor Works, Lansing, Mich., which have been concentrating on a four and an eight, have saved a brand-new six-cylinder model as a show surprise. This incorporates an overhead-valve 2⅞ x 4¾ motor in which the pushrods are external, and there is an aluminum casing covering the overhead rockers and the side mechanism of the valves. The new car is styled model 46 and, as a five-passenger touring or four-passenger roadster, lists at $1,095.

The motor is quite conventional in design and as equipment has such standard fittings as the Johnson carbureter, Delco lighting, starting and ignition, and Stewart vacuum feed. Cooling water is pump-circulated. The transmission elements include a leather cone clutch which, with the gearbox, forms a unit with the engine, two Spicer universals and a floating spiral bevel axle. The wheelbase is 112 in. and tires are 32 x 4.

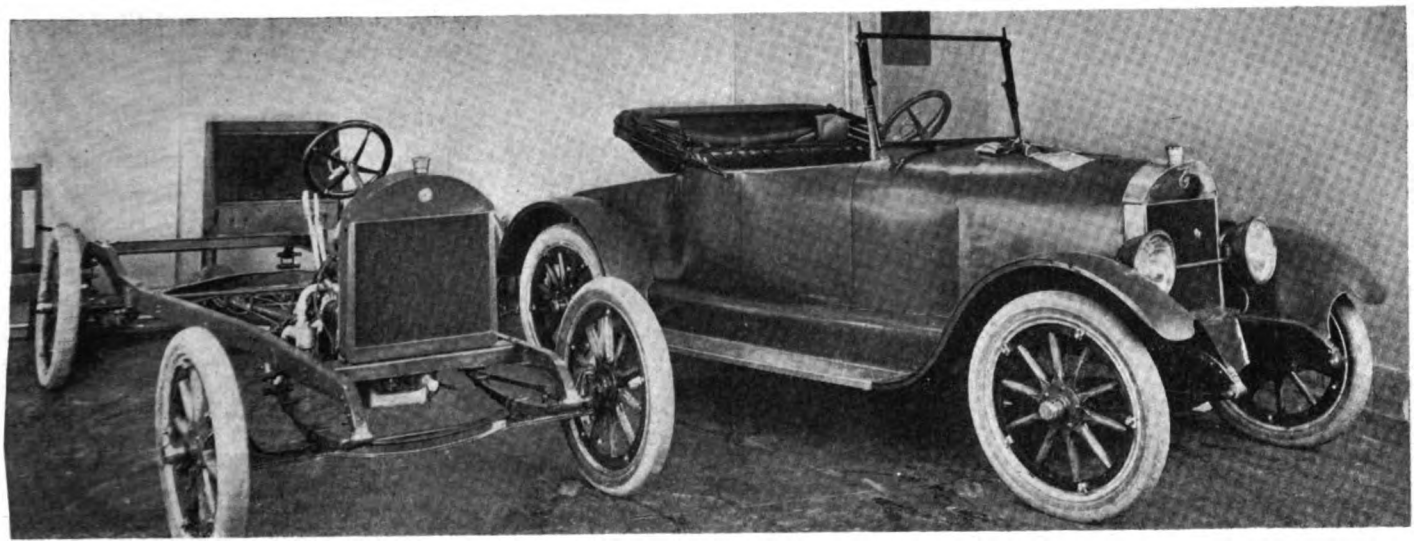
The car bristles with selling features. For example, the upholstery is the latest type of plaited leather over spiral springs, with the upholstery carried over the top rail to protect the body finish and increase comfort. The running-boards are covered with a composition styled Linkrustum, which is sightly and durable. The radiator is new in shape, and though conforming to the original lines on the eight-cylinder model is slightly different. Oil cups replace grease cups on the spring bolts, and the rear springs are semi-elliptic. Both the steering wheel and the dash are Circassian walnut.

Columbia Six Is Revealed

The Columbia six, which has been under development for some time by the Columbia Motors Co., Detroit, is largely an assembled job, using nothing but standard parts throughout. Thus there is a six-cylinder Continental 3¼ x 4½ block motor, a Borg & Beck clutch and a Warner gearset, these three combining to form a unit power plant. The drive is through Spicer universals to a floating Timken axle, and self-lubricating Detroit springs of the cantilever type are used. Ignition is by Atwater-Kent, with Ward Leonard starting and lighting. Other equipment includes a Stromberg carbureter and Warner steering gear. The wheelbase is 115 in.

The Ben-Hur, which is produced by the Ben-Hur Motor Co., Cleveland, is an-

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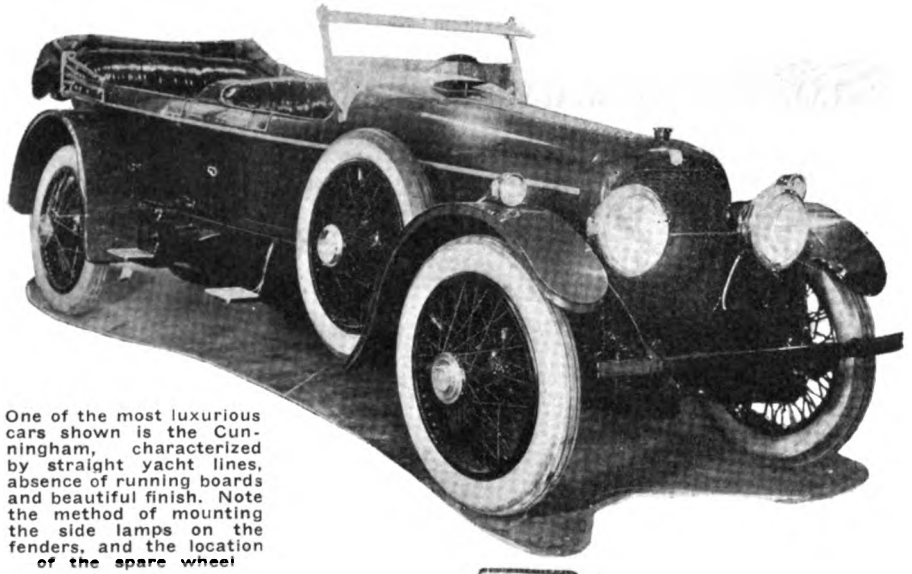
The Ams-Sterling which is exhibited for the first time is made only in roadster form

other new assembled product. This has a 3½ x 5¼ Buda engine with standard transmission elements, including a Timken axle. The motor is lubricated by a combination of splash and pressure, and the cooling water is pump-circulated. For ignition there is a Bosch high-tension magneto, and starting and lighting is by a two-unit Westinghouse system. The wheelbase is 126 in., with 35 x 4½-in. tires, and the car sells for $1,875 as a four-passenger roadster or five- or seven-passenger touring. A seven-passenger touring sedan is $2,750.

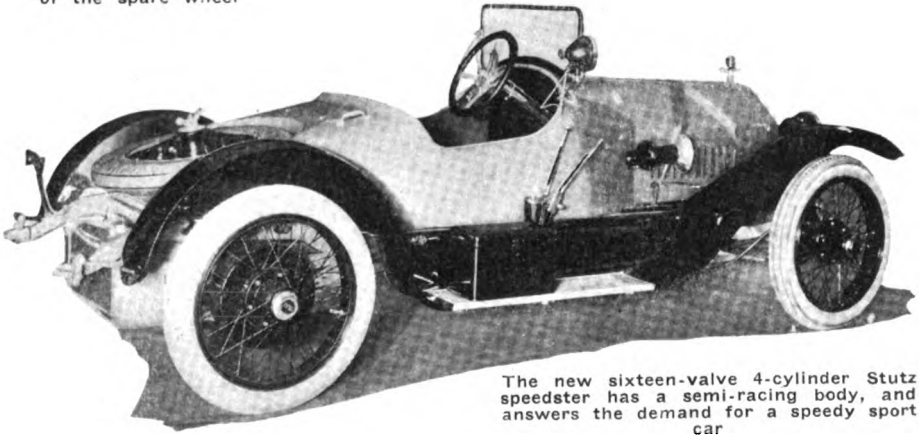
Majestic Eight Appears

The Majestic Motor Car Co., New York, is exhibiting its initial product, a sightly five-passenger touring model equipped with special upholstery and a victoria top. This is an eight, with cylinders 3 x 5, and sells for $1,650. Transmission elements include a three-plate clutch and three-speed gearset, the drive being taken through three-quarter-elliptic springs on the Hotchkiss principle. Ignition is by Atwater-Kent, and starting and lighting is Auto-Lite. The wheelbase is 125 in. and tires are 32 x 4.

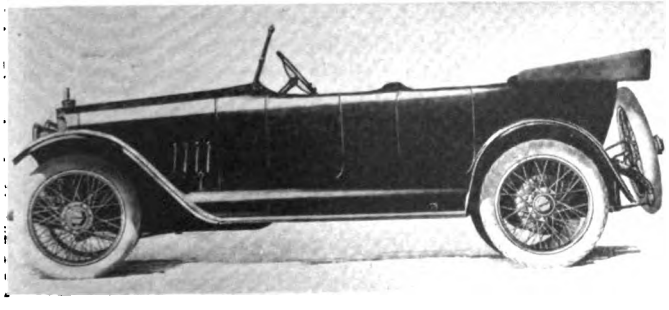
The Dey electric, which is produced by the Dey Electric Corp., New York, is unique in that it has what is probably the simplest kind of a chassis. This is merely a framework for supporting the body, and the entire driving unit is a part of the rear axle. The motor is the General Electric double-rotating type in which both the field and the armature rotate. The field is connected with an axle to one of the rear wheels and the armature to an axle to the other wheel. This gives an electrical differential, owing to the fact that the action and reaction are equal between armature and field, thus giving an equalized drive. A standard 60-volt 75-amp.-hr. capacity battery is mounted amidship, and this



One of the most luxurious cars shown is the Cunningham, characterized by straight yacht lines, absence of running boards and beautiful finish. Note the method of mounting the side lamps on the fenders, and the location of the spare wheel

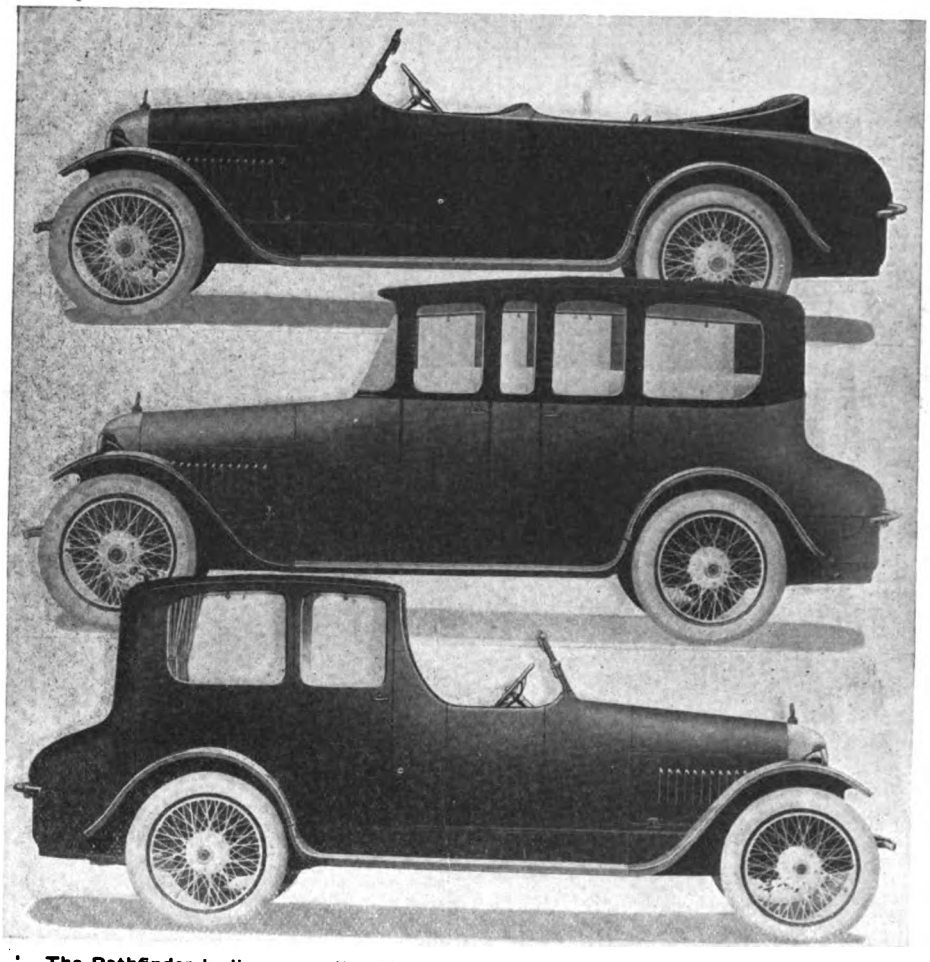


The new sixteen-valve 4-cylinder Stutz speedster has a semi-racing body, and answers the demand for a speedy sport car

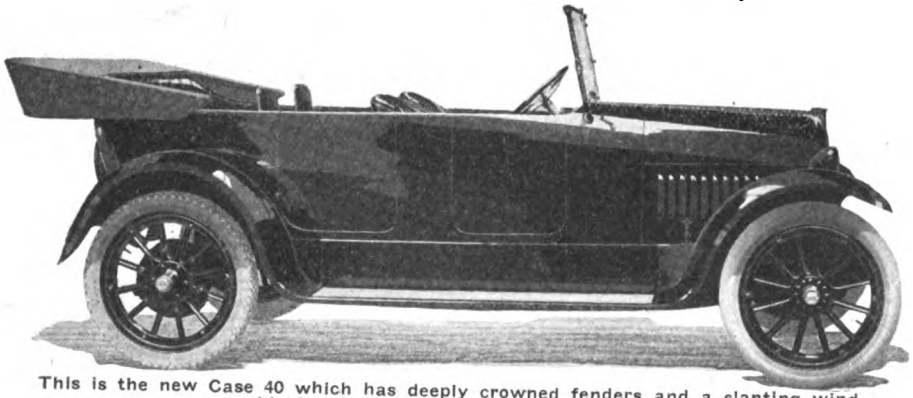


The Ben Hur is one of the newcomers at the show

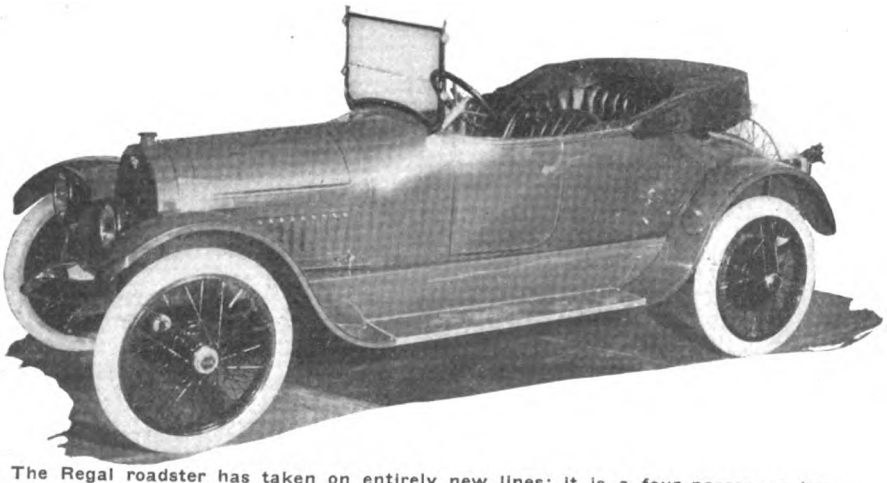
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The Pathfinder bodies are quite different from any others; in the open models both top and two spare wheels are completely housed and out of sight. Spare wheels are carried in a revolving case beneath the rear of the body



This is the new Case 40 which has deeply crowned fenders and a slanting windshield; this is really a straight line body



The Regal roadster has taken on entirely new lines; it is a four-passenger type with divided front seats

gives a radius of action of 55 miles on one charge.

Doble Is Only Steamer

The Doble steam car, which is produced by the General Engineering Co., Detroit, has the distinction of being the only steamer at the show. It is fitted with a luxurious seven-passenger body having a Victoria top. The car has a vertical-tube steam generator under a hood at the front, and under this there is a combustion chamber with a burner which is electrically heated and uses kerosene for fuel. The steam is passed back to a two-cylinder engine in unit with the rear axle, and thence through a condenser mounted like an ordinary radiator at the front of the car. No clutch or gearset is used, the steam engine being directly connected to the axle. When starting, a switch is turned to the running position. This heats an igniter point and ignites the fuel, when sufficient steam is generated in about 1½ min. to start. The entire operation of the power plant is automatic, pressure being maintained constant, or practically so, under all conditions.

Buick Has Big Six

The Buick Motor Co., which early this year brought out a small four, has now added a large six with seven-passenger body. This is in addition to the six already in production. Like other Buicks, it is an overhead-valve job but differs from the others in that the intake valves are larger than the exhaust in order to increase volumetric efficiency. The engine is block cast, 3⅜ x 4½, with a solid head, aluminum crankcase and pressed oil pan. The valve drive is by helical gear. Standard equipment includes Delco light, starting and ignition, Marvel carbureter and the usual Buick features in the transmission element. The wheelbase is 124 in. and tires are 24 x 4½.

A Scripps-Booth Four

The Scripps-Booth Corp., Detroit, is continuing its eight practically without change and has developed a new four with a 3 11/16 x 4 motor which has the Brush valve gear, in which adjustments can be made while the motor is running. This is a block design with all the parts inclosed. Lubrication is by a double-plunger pump, giving both splash and pressure. The carbureter is a Zenith, and Remy ignition, lighting and starting are used. The transmission elements include a leather-faced cone clutch, a three-speed gearset and a three-quarter-floating axle. The car is equipped with five Houk wire wheels carrying 30 x 3½ tires. Rear springs are full cantilever and the wheelbase is 110 in. Both roadster and coupe are supplied.

New Willys-Knight Eight

In addition to the new four-cylinder

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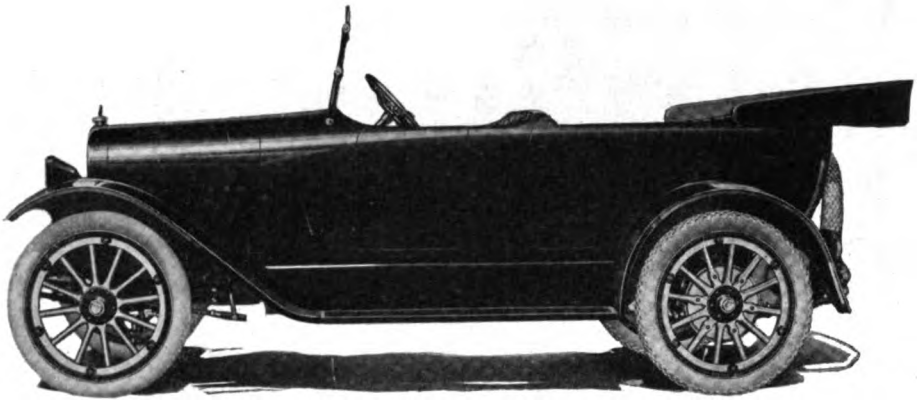
model 90 announced some time ago by the Willys-Overland Co., Toledo, and exhibited for the first time at the show, there is a brand-new eight-cylinder model with a Knight engine. As is usual, the motor is in the form of a V with the cylinders in two blocks, with a bore and stroke of 3⅜ x 4. The eccentric shaft is in the center line of the engine and drives all the eccentrics. The shaft is directly above the crankshaft. Except that it drives sixteen sleeves instead of eight or twelve, there is nothing unusual in the layout. Cooling is by thermo-syphon, ignition by a single battery system, and gasoline is fed by the vacuum method. The chassis is similar to other Willys products, but is longer, measuring 125 in. The transmission elements include a leather-faced cone clutch fitted with a clutch brake and a gearset in unit with a floating, spiral bevel axle. The body is a modern type with a capacity for seven, and has a cowl at the back of the front seats.

Chevrolet Adds an Eight

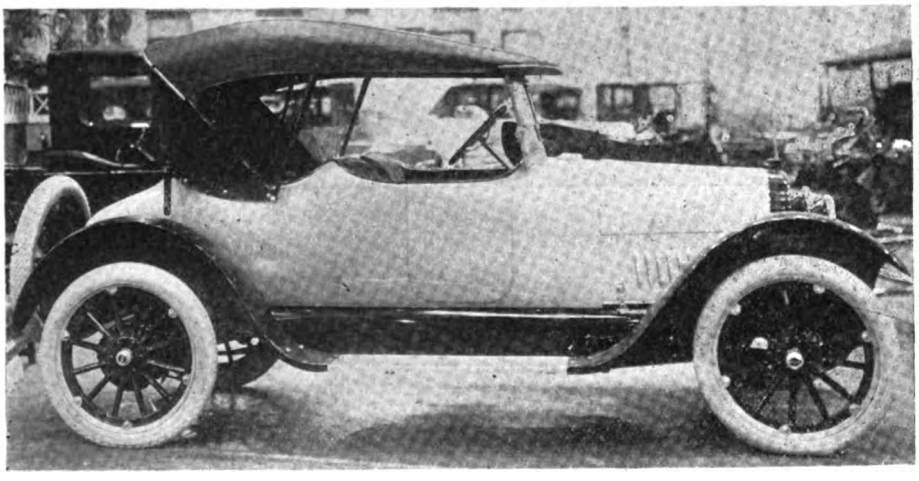
The Chevrolet Motor Co., Flint, has saved up a real surprise in a brand-new eight-cylinder model in four-passenger roadster and five-passenger touring car form at $1,385. This is an overhead-valve job, and the valves can be adjusted while the motor is running; they are operated by external pushrods with overhead rockers. The motor is the usual V-type, and is remarkable for the accessibility of the various accessories. For carburetion there is a new double-jet Zenith carbureter, and ignition is taken care of by a Remy system, with lighting and starting by Auto-Lite. Power is transmitted through a leather-faced cone clutch with ten engagement springs and a three-speed gearset to a three-quarter-floating axle. Springs are semi-elliptic in front and semi-cantilever in rear, the wheelbase being 120 in. and the tires 34 x 4. Bodies are beautiful jobs with mahogany paneling and molding.

Puritan a Newcomer

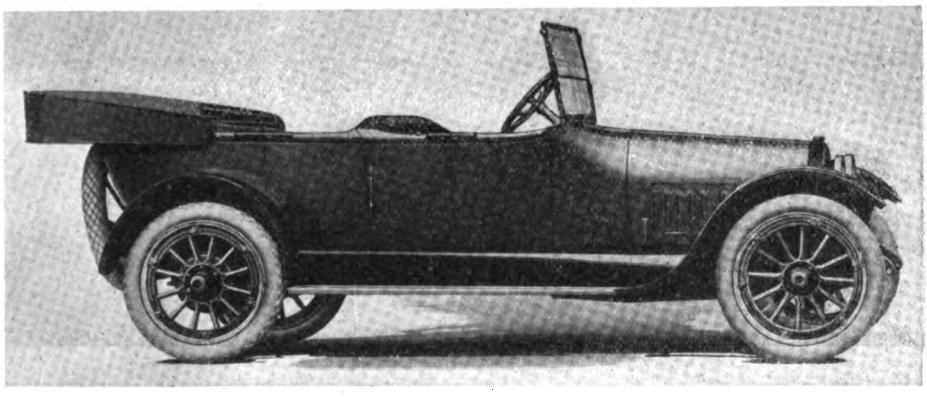
A newcomer at the show is the Puritan, the product of the Puritan Motors Co., Framingham, Mass. This is an assembled unit with a specially built Buda 3¾ x 5½-in. four-cylinder engine, Warner dry-plate clutch, American ball-bearing axle, Eisemann magneto, and Gray & Davis starting and lighting. The gearset has four speeds, and the car is overgeared on high with direct on third. On direct the ratio is 4 to 1, while on the over-gear the ratio is 3 2/3 to 1. The tires are 32 x 4½. The car is distinguished by a particularly comfortable and good-appearing four-passenger body made by the Farman Nelson Co. With this body the car sells for $2,775.



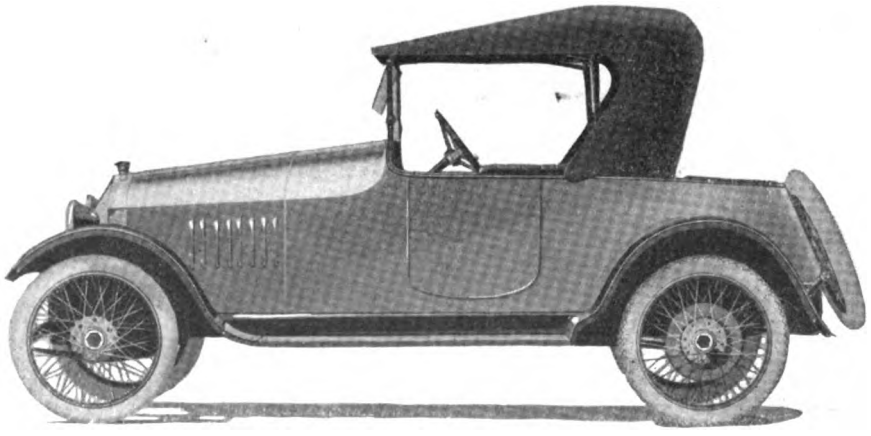
A distinctive feature of the Drexel is that it has an overhead valve four-cylinder engine with four valves to each cylinder



Chevrolet has a brand new eight-cylinder model carrying both a four-passenger roadster and a touring body

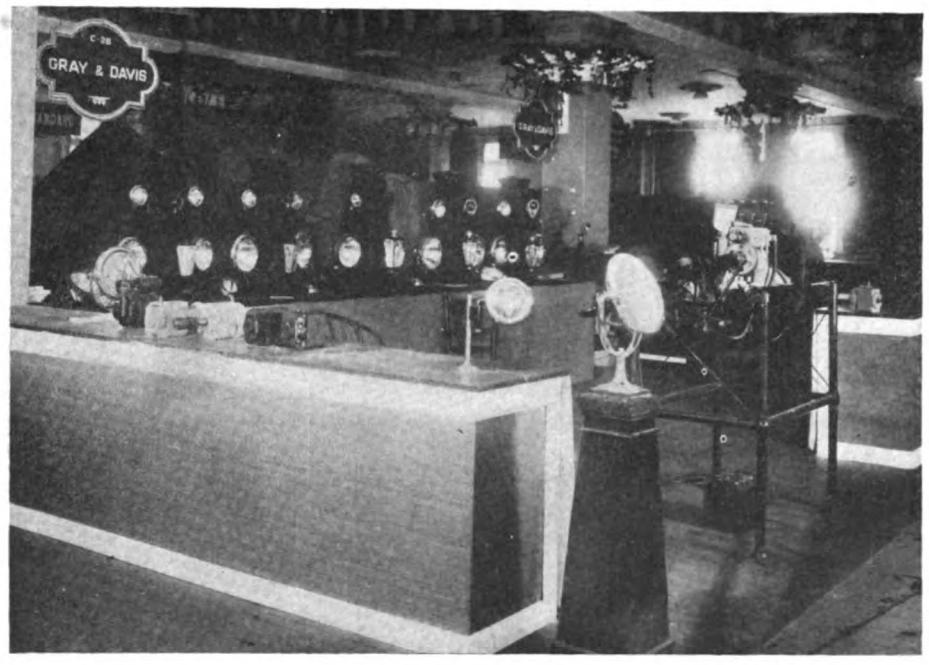


The Buick big six is a commodious seven-passenger model and the engine has intake valves larger than the exhaust

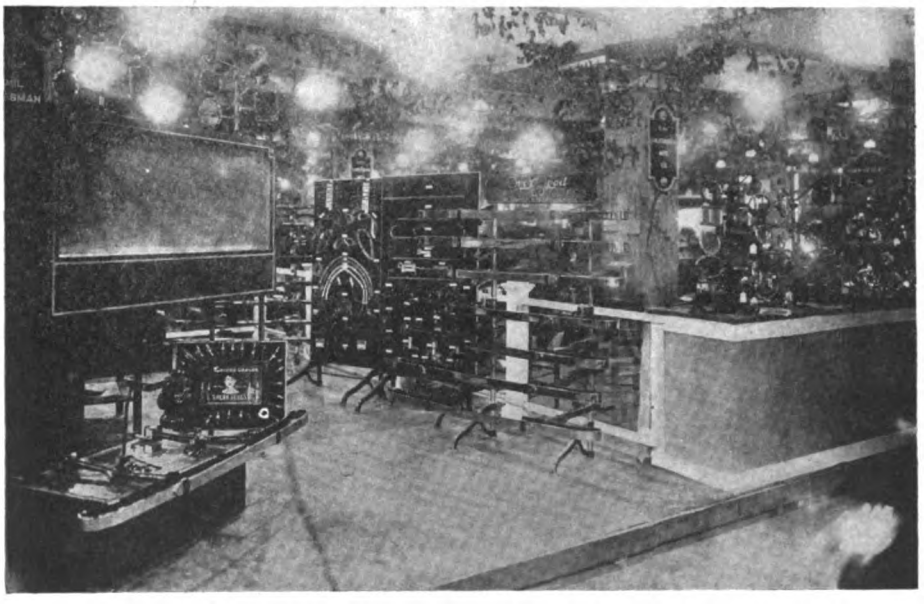


The rectangular type of body is well represented by the new Scripps-Booth four; note the rear storage compartment

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The lamps of Gray & Davis are neatly and conspicuously displayed and the whole exhibit is one which appeals to the eye when brilliantly illuminated



Emil Grossman's bumpers and spark plugs are set up in an attractive form. The fixtures used are of a style which lifts a mechanical display out of the ordinary



Sparks-Withington has placed a black-and-white striped background upon its fixtures and, with plenty of space, furnishes an attractive layout

Better Display Marks the New York Exhibits

More Intensive Merchandising Spirit Indicated, Especially on Accessory Floors

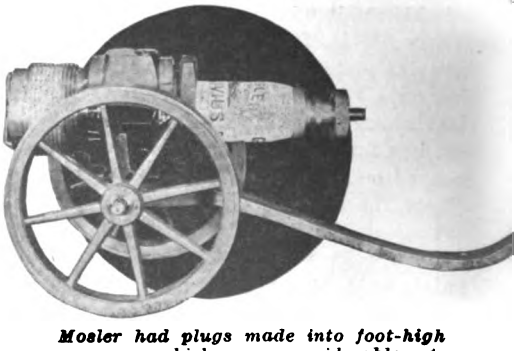
That the period of intensive merchandising is at hand is no longer a matter of prophecy. It is shown throughout the show, from the car exhibits to the accessory booths on the upper floors—and especially among the accessories.

As one man so well expressed it, "It looks more like a finished industry than any show we ever held." The cars are built more than ever before with the wants of the buyer in mind. There are all sorts of little improvements. Bad curves, ugly breaks, missing conveniences which have been somewhat neglected in the past are carefully treated in this show's vehicles. They are more like what the buyer would like his automobile to be.

And in the accessory exhibit of a year ago—and years past—the displays were, in a majority of instances, anything but displays. Exhibitors practically dumped their wares into their booths. Products were set upon tables with bare tops. Things were stuck up in any old way where they could—or could not—be seen, and the shows lacked a real merchandising atmosphere.

This year it is different. Bare table tops are missing. Products do not look like piles of junk. They are DISPLAYS. There are all kinds of fixtures for holding goods. Spark plugs always have been mounted in various forms, and some other devices, such as carbureters, have had their trappings; but there is more of that even this year than ever before.

One exhibitor of heavy truck wheels has worked out an admirable arrangement, with his wheels, set in a row, inclosing his exhibit on three sides. Stewart-Warner, always intensive, is more so than ever. White-gowned women and bright lights are objects of attention, and when the attention is secured a lecturer tells his brief story—and later repeats and repeats and repeats.



Mosler had plugs made into foot-high cannons, which won considerable attention

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"All plugs are alike," said one showgoer. Maybe they are; but if a single point in the lecture sinks home, and if when the motorist goes to buy a plug he says "V-Ray," and if enough of them say "V-Ray," Stewart-Warner will have gotten its money back.

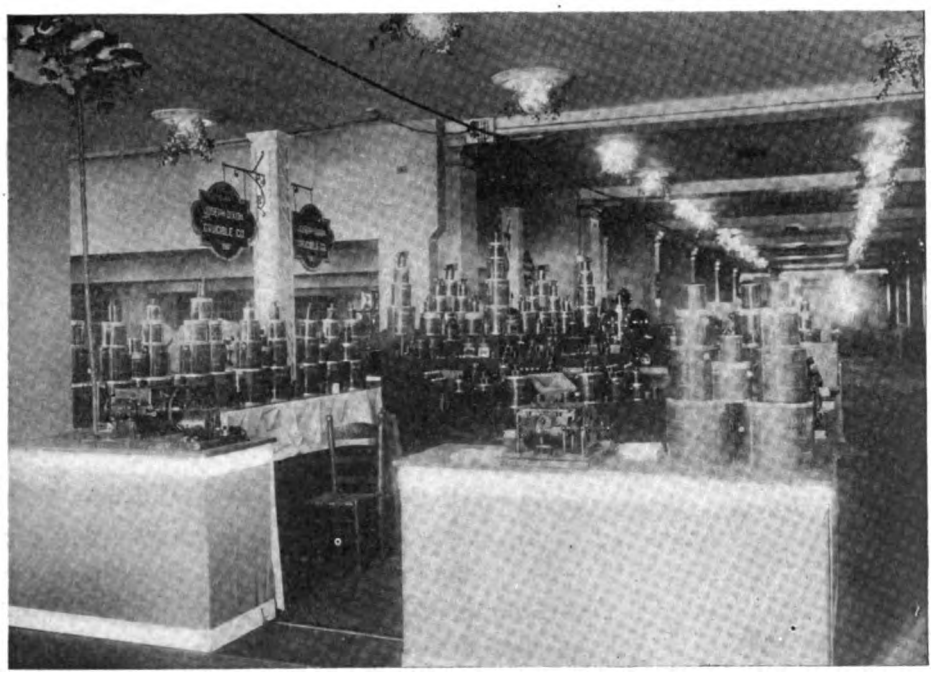
In the Paige exhibit is a studied departure from the familiar chassis exhibit. A mahogany-stained chassis is cut in half lengthwise and is raised about a foot so it can be easily seen. It is a worth-while type of mechanical display. Studebaker is following up its "gold chassis" with a "gold car." This is a white car with gold trim, and much of its publicity value is due to the publicity received last year from the gold plated chassis.

Cole is using a lecturer, and some who used to use lecturers are not. The lecturer is about a fifty-fifty proposition so far as vogue is concerned.

In the car exhibits a point worth while considering is provision for crowds. The throng at the Palace show is so enormous that getting into and out of an exhibit is often not unlike getting home on the subway in the rush hours. Of course, New Yorkers are used to that; but others than Gothamites attend the show. The Chalmers exhibit is well arranged for a crowd. The chassis is at the front-aisle side, where it does not obscure the view of the pretty cars behind, and the cars are so arranged that there is a good open space in the center of the exhibit. It works out well.

Maxwell has also done well along this line; and so has Hudson. Some of the others have wasted their space by the method of placing the cars; and the crowd is always so dense in the exhibits that it approaches the stagnation point so far as movement is concerned.

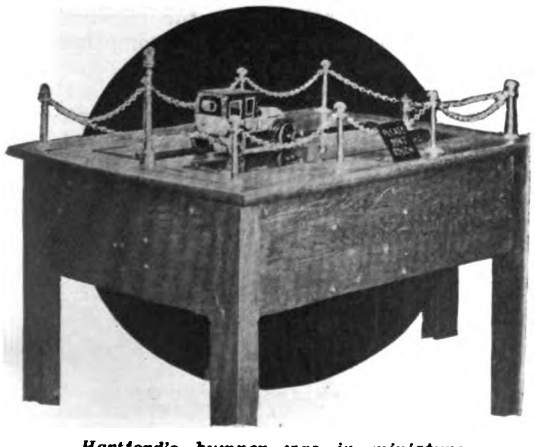
A new thing at the show is the National Used Car Market Report of the Chicago Automobile Trade Association. F. W. Gottlieb, field representative, has a desk on the third floor, and explains the proposition to dealers. It costs $24 a year. There used to be a $12 collective rate, but this has been discontinued.



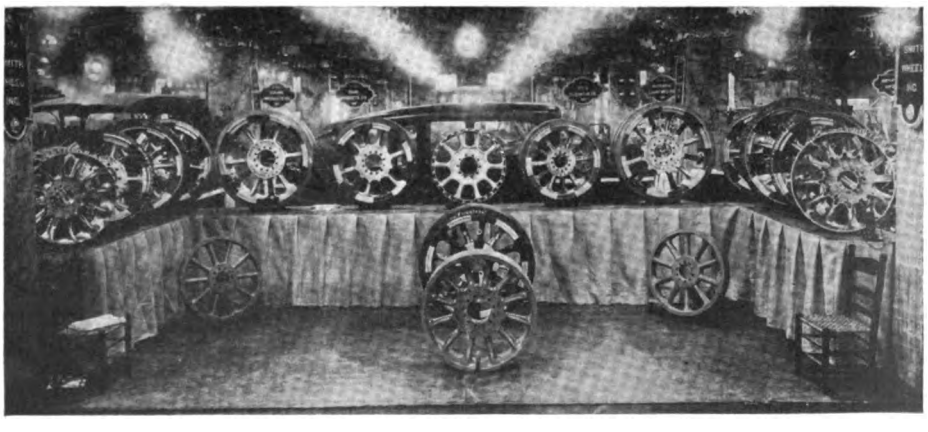
The Joseph Dixon Crucible Co. did well with nothing but cans of lubricant. It takes study to make a contained product of this kind look like anything



Splitdorf had all kinds of fixtures in its booth. Many other exhibits would have been improved by the use of something besides mere shelving



Hartford's bumper was in miniature on a car magnetically bumped against a hydrant and a lamp post



Nothing but wheels, yet the Smith wheel display is one of the best at the show. It illustrates what can be done by study and compares exceedingly favorably with several other exhibits of similar products

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87 Accessories Are New

THERE are scores of brand new accessories on view at the Palace, and spread among them there are scores of others that are no less prominent because they are not so new—have been on the market for a year or more, and so have won a place in the world's goods on their merits.

IN point of numbers, the accessory section is smaller than it was last year. There are 227 separate exhibits as against 306 for 1916, though this does not mean that there is any less of genuine newness. Nor does it mean that many of the old familiar products are dropping out.

The keynote of the exhibits is utility. Mere gimcracks and gee gaws are passing; to appeal to the public taste a device must have merit, be useful, something more than merely ornamental.

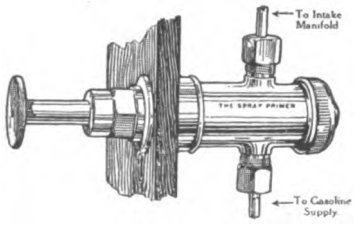
And so the new items are primarily useful, in many cases really necessary, and for this reason should find a ready sale. Following are brief descriptions of many of the devices in the 1917 crop.

Halladay Can Tipper

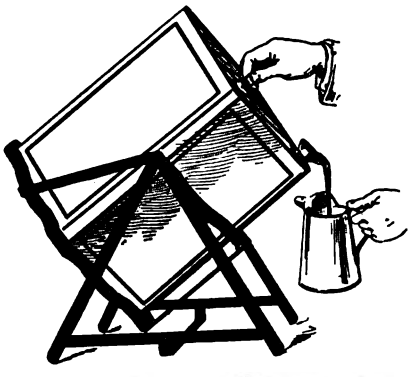
Oil may be poured from a round or square container without lifting the container from the floor. A steel framework holds the can off the floor on a pivoted rest, permitting the can to be tipped and controlled with one hand. The price of the tipper is $1.75.—L. P. Halladay Co., Streator, Ill.

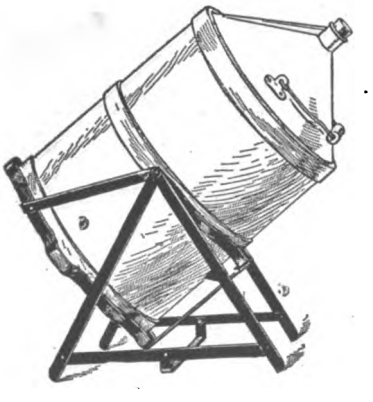
Spray Primer

The spray primer is a small injector pump, the operating button of which is attached to the inside of the dash or floorboard, drawing gasoline from the supply line and forcing it into the intake manifold. It may be attached to any car in less than 1 hr. and requires no soldering of joints, the joints being of the cone connected type. The price complete for installation is $7.50.—Spray Primer Co., 11 Pemberton Square, Boston.



The injector pump of the Spray primer is placed on the dash





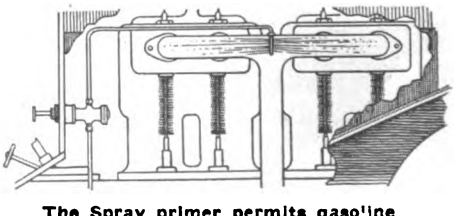
A can tipping device that will be appreciated both by the garage man and the car owner. It is made by the L. P. Halladay Co., and sells for $1.75

Morgan Piston Ring Compressor

Pistons may be inserted in the cylinder with ease by the aid of this ring compressor. It comprises a series of steel clamps held together by two steel cables inserted in the piston. These are placed around the rings and contracted by means of a hook and screw. When the piston is inserted in the cylinder the contractor slides upward, allowing the rings to slip in place. Price, pistons 2 to 4 in. diameter, 80 cents.—S. W. Merritt Co., 311 West Fifty-ninth Street, New York.

The K-W AutoLock Switch

This lock is attached to the standard Ford ignition switch. It comprises pressed-metal housing holding a Yale lock that fits over the Ford switch, and is screwed to it. When in the locked position this housing cannot be removed, as two metal logs are engaged with a steel plate that is attached to the Ford



The Spray primer permits gasoline to be drawn from the supply line and forced into the intake manifold

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switch. The lock cannot be removed without throwing off the circuit, the car being automatically locked when stopped. The switch may be installed in 5 min.—The K-W Ignition Co., Cleveland.

Hoskyns Tops

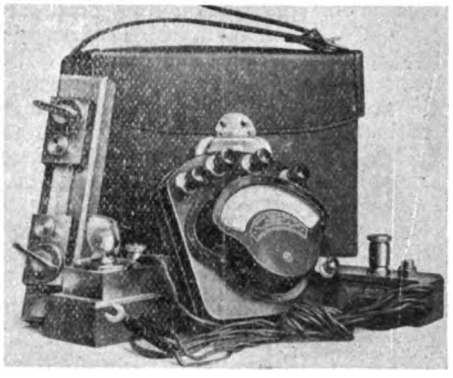
Detachable tops are supplied for Ford, Overland, Maxwell and Chevrolet and other popular price cars. The tops are made of the best materials and are well put together, the rear and the lower side sections being pressed out in oil and taking a very fine paint finish, besides being light, durable and waterproof. Plate glass is used for the windshield and windows, and the windows may be removed. The Ford top is $125 complete in the touring car and $110 in the roadster; for the Overland country club $135, for the Chevrolet roadster $110, and other moderately priced cars in proportion.—Universal Motor Products Co., Indianapolis.

Weston Garage Testing Instrument

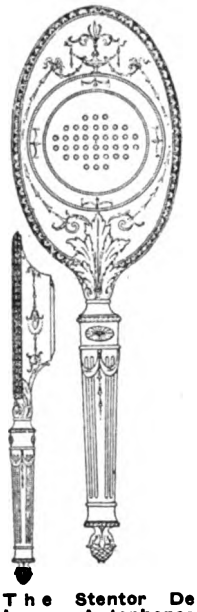
A complete electrical testing set for garages, designed to locate all troubles of electric starting and lighting systems. It consists of a voltmeter, millivoltmeter, ammeter, milli-ammeter and voltammeter together with all shunts and connections necessary for testing, packed in a pocket size leather case. The uses of the instrument are varied, some of them being determination of exhausted batteries, short circuits or grounds, defective lamp sockets, open circuits, brush troubles in the motor or generator, etc. A full description of the method of making connections for the various uses is included with the instrument. Price of the model 280 is $2250.—Weston Electrical Instrument Co., Newark.

Marvel Chain Fastener and Tire Tool

The ends of tire chains may be quickly drawn together and hooked by the use of this chain fastener. It comprises a short hooked member that catches the loose end of the side tire chains and a notched lever that engages the snap lock end of the chain. A single throw of the lever draws the two ends of the chain together, permitting them to be locked. The chain fastener is equally efficient as a tire tool, as the hooked member may be caught around one of the spokes and the lever used to ply a tire free. The price is 50 cents.—Automobile Accessories Co., Craig Street and Grant Boulevard, Pittsburgh.



A special Weston Electric testing set for the repairman



The Stentor De Luxe Autophones are the last word in closed car luxury. They form a compact telephone system connecting the occupant and the driver

Stentor DeLuxe Autophones

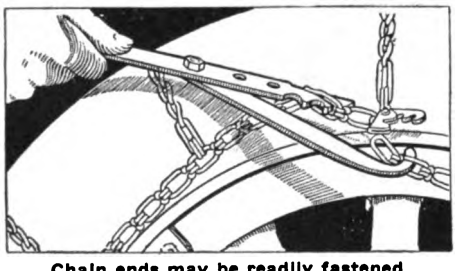
In accordance with the increasing luxury of the enclosed car a complete and distinctive line of autophones has been produced. Mechanical construction is practically the same throughout, being an electrical device permitting the occupant of the rear compartment of the enclosed car to direct the driver, and acting upon a principle similar to that of the telephone. The autophones may be had in practically any desired design or finish, one set, the No. 9, having a transmitter of sterling silver decorated in enamel to match the upholstery of the car and carrying a mirror on the reverse side. The prices range from $25 up.—Stentor Electric Mfg. Co., Inc., 126 Fifth Avenue, New York.

Ames Deflector

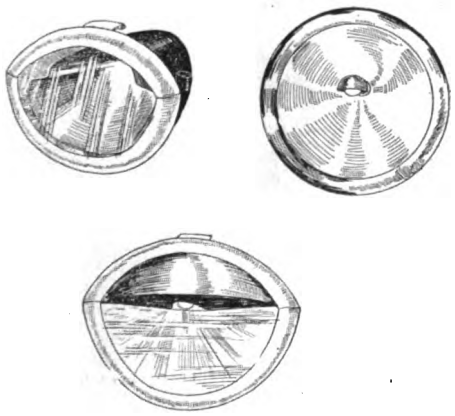
By means of a metal hood attached to the upper half of the headlight bulb the rays of light leaving any parabolic headlight reflector may be projected in a flat topped beam that is said to remove glare without greatly reducing the amount of illumination, providing the headlights are properly focused. Two types are made, one for use in parabolic headlights in 1⅛ in. focal length or more, and the other for use in parabolic headlights having a focal length between one 1⅛ and 1 15/16 in.—Heinze Electric Co., Lowell.

Z-Ro-Hot Moto-Primer

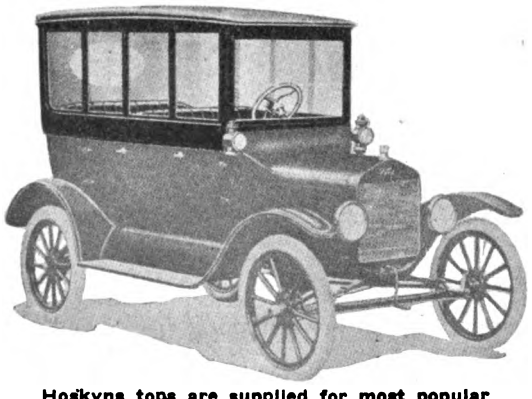
Starting in cold weather is facilitated by means of this device. It consists of a tube joining the carbureter and the manifold, the upper end of the tube carrying an electric heating coil and dash-operated valve. When the valve is opened from the dash an electrical contach is made and the coil heated; the motor is then cranked, causing gasoline to be drawn from the carbureter through the heating coil and into the manifold. After the motor is started the valve is closed from the dash and the electrical current broken. By means of special connections the device may be fitted to any car and sells for $12.50.—Motor



Chain ends may be readily fastened or unfastened by the Marvel chain fastener



Three Heinze Electric non-glare headlights. The one at the right is fitted with an Ames deflector

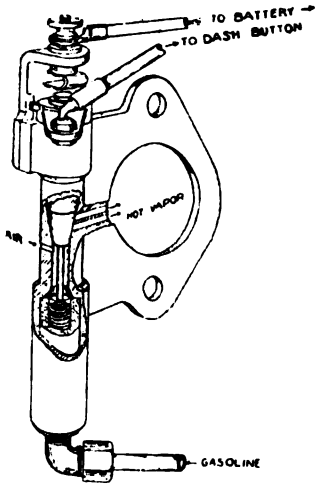


Hoskyns tops are supplied for most popular priced cars



The new K-W Autolock switch slips over the standard Ford switch and is positively locked in place when the switch is off. Note the Yale lock

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The Z-Ro-Hot Moto-Primer electrically heats the gasoline before it is injected into the intake manifold

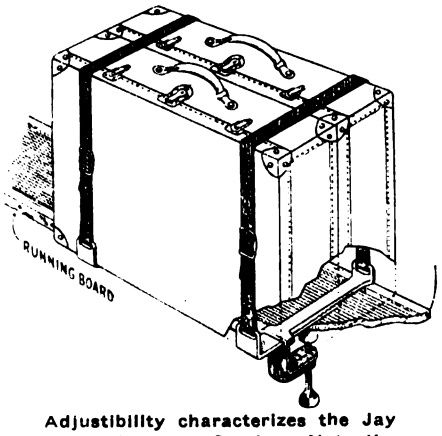
Engineering Co., 1523 Fort Street West, Detroit.

Master Portable Garage Pump

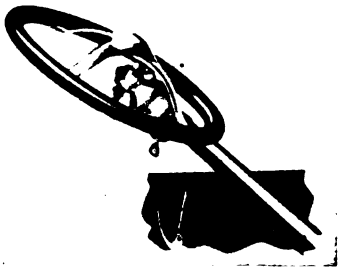
Designed to stand abusive service, this pump is driven by a one-half horsepower General Electric motor mounted on a metal truck. The pump has two cylinders with a bore of 1¾ in. and a stroke of 2 in., and will inflate a 37 x 5-in. tire to 90 lb. in less than 2 minutes. The pump is direct-connected to the air line, and all impurities or oil are removed by means of a small expansion chamber attached at the pump outlet. A small nozzle is supplied that may be attached to the outlet, permitting the outfit to be used as a compressed air cleaner. The pump is also supplied in the stationary type and may be had to operate either on direct or alternating current. The price of the alternating current set is $105, of the direct current set $100.—Hartford Machine Screw Co., Hartford.

New Branford Carbureter

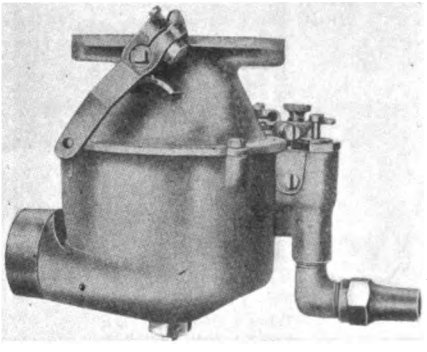
New throughout, the model S Branford carbureter may be attached to any engine, incorporates a flange, gas connection and air inlet that may be turned in any position, and a dash control that governs every function of the instrument. In construction the bowl and body are combined in one casting with no joints or seams for leakage. The dome, carrying a flange, and forming the cover of the bowl, is also a single casting. These two parts are held together by four interchangeable steel screws, so arranged that the flange may be held in any position. The float is exceptionally large and specially treated to prevent water-logging, and is said to have twice the lifting power of the ordinary float. It actuates a guided, self-centered fuel valve of phosphor bronze. Following the principle of preceding Branford models there is but one moving part, namely, the weighted air valve.



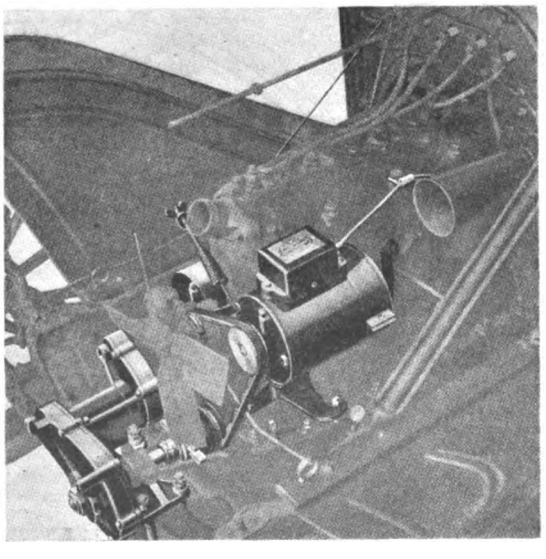
Adjustibility characterizes the Jay & Dee Luggage Carrier. Note the method of attachment to the running board, and sliding brace



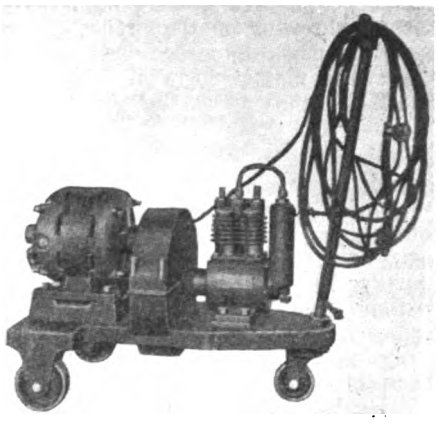
Unsnap a button, and the Oro wheel for Fords may be thrown to the position shown. It sells for $5.50



Simplicity, adaptability and sturdy construction characterize the new Branford carbureter for all cars



Refinements mark the A-B-C electric equipment for Fords. It now has a V-driving belt, and pressed steel bracket

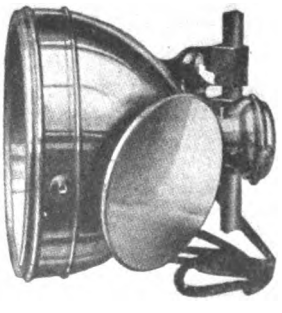


This Master portable garage pump is a complete unit in itself, and may be had to operate on either direct or alternating current

This valve automatically regulates the flow of both fuel and air and permits low throttling speeds and quick acceleration. To facilitate starting a control is mounted on the dash or steering column. This is of the plunger-operated type that controls the opening of the needle valve, and by pulling out the plunger an excess amount of gasoline is mixed with the incoming air, thus facilitating starting. At the base of the plunger a knurled micrometer screw permits the plunger to come to a seat at the point that gives the engine the best running mixture, and the adjustment of the carbureter may be finally made from the seat and while the car is running.—Holt-Welles Co., Inc., 1790 Broadway, New York.

The Pittsburgh Parabolite

A 7-in. electric spotlight with brackets suitable for attachment to any car and incorporating a Cutler-Hammer switch in the handle. The feature is a 6-in. patented Parabolite main reflector of brass with a heavy silver finish that directs the light rays in a parallel beam. Glare is prevented by means of an auxiliary reflector passing over the light bulb. A simple and positive focusing attachment is provided. There is a 4-in. diminishing mirror at the side of the lamp. The price with bracket is $7.50.—Pittsburgh Electric Specialties Co., Pittsburgh.



Combining a diminishing mirror and universal spotlight, the Pittsburgh Parabolite may be thrown off or on by a handle-switch, and is readily focussed

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A-B-C Electric Ford Equipment

Changes that render installation simpler and maintenance easier characterize the improvements in this starting and lighting system for the Ford car. It is the two-unit 6-volt system in which the starting motor is idle when not used for cranking and the generator requires only ⅛ horsepower for operation. The generator is now driven by a three-way V-belt that also drives the fan and a stamped bracket is now used for attaching the device to the engine. Installation is very simple and requires no changes in the Ford construction, merely the substitution of longer bolts for the short bolts holding the engine. The price of the system includes the installation and is $95.—A-B-C Starter Co., Detroit.

Rhoades' Battery Ignition for Fords

New throughout, this system features extreme flexibility and high efficiency. It is operated by six dry cells which supply sufficient current for two to four thousand miles running, leaving the Ford magnet to furnish lighting current exclusively. The system comprises a non-vibrating transformer coil and a combined breaker and distributor mounted on the standard Ford timing shaft, but in a vertical position. The wearing surfaces of the breaker are large and so designed that the breaker points are well separated except at the instant that the spark is taking place. Another feature of the breaker is that by means of a ratchet device the cam remains stationary should the engine backfire, and hence no spark is produced. Price is $20.—New York Coil Co., 338 Pearl Street, New York.

Touring Luggage Carrier

By the use of this carrier luggage may be readily carried on the runningboard. A carrier comprises two extension clamps that are clamped to the runningboard, carrying straps for holding the luggage in place. Because of the extension feature the wood for the carrier can readily be adapted to the width of the suitcases or packages that are to be carried, and the screw-clamp feature permits the carrier to be removed and packed beneath the seat when not in use. The price of the carrier is $2.50 per set.—The Jay & Dee Specialty Co., Inc., 41 Park Row, New York.

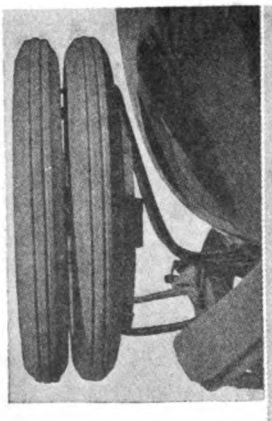
Oro Steering Wheel for Fords

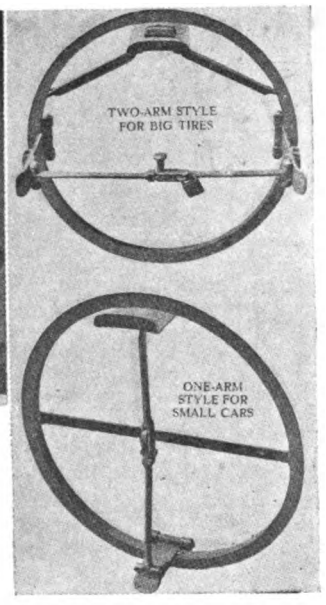
This is a corrugated wheel with a malleable spider finished in black enamel and having a diameter of 17 in. It is made in two types, a tilting and non-tilting. Both wheels are interchangeable with the regulation Ford equipment, the spiders being machined to fit the standard steering column. The price of the tilting corrugated wheel is $5.50, of the non-tilting $3.15.—Au-To Compressor Co., Wilmington, O.

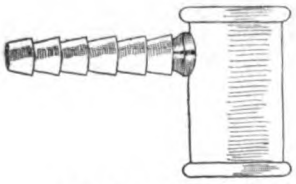
Hoover Tire Carrier

In addition to being a tire carrier of rigid construction this carrier also permits the tires to be positively locked in place. On a sturdy rack bolted to the rear of the car is a circular frame, over which the tires are placed. An expansion clamp is then opened, forcing two spring arms behind the rim of the tire and holding it securely in place. The expansion clamp is then locked in position by means of a padlock. The tires are kept apart, are kept in place without either chains, straps or pans, and hence there is nothing to chafe the tire. The standard size has capacity for two tires, but it is also made of one- or three-tire capacity.—Hoover Spring Co., Inc., 617-637 Turk Street, San Francisco.

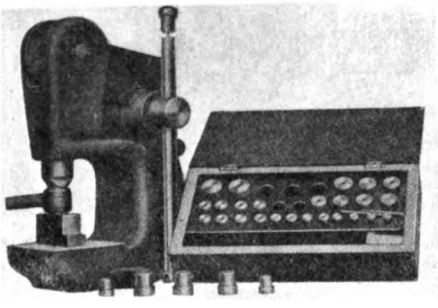
Right — The Hoover tire carrier. Note the rigid construction and method of locking tires







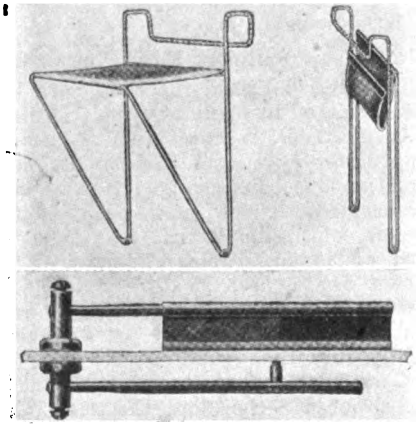
Above — A new Schrader inflating valve



By the use of the Beach Process Press, old bushings are swedged back to their original size

The Beach Process Bushing Press

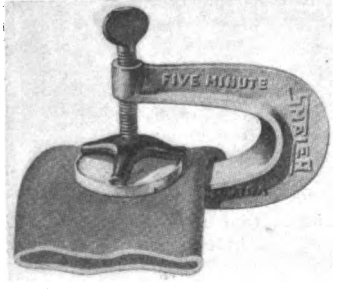
By the use of this press the necessity of replacing bushings is obviated. The outfit consists of a small press and a set of swedges in all sizes from 7/16 to 1 3/16 in. that will take practically all of the standard bushings met with in the repairshop. After swedging the bushings in place they may be again reamed to a fit. It is said that six connecting rods may be swedged and reamed in less than one-half hour, and because of the swedging process the metals in the bushings are finer grained than formerly. The price is $100 less 25 per cent f.o.b.—Greb Co., 196 State Street, Boston.



A McKinnon folding seat for the Ford. It hangs over the rear door, the brace resting on the door bottom. Lower—J-T windshield cleaner

McKinnon Folding Seats

Extra capacity is provided by means of special folding seats. One type, the No. 90, for the Ford, is made to hang on the rear doors, the bottom resting on the sill. The doors cannot be opened when the seats are in use. This type of seat can also be made on order to fit the Overland. The seats are round steel electrically welded and japanned, with black art leather padded upholstery. When not in use they fold 12 x 19 x 3½, and have a net weight of 4 lb. The price is $1.75. In addition a complete line of standard folding chairs is carried.—McKinnon Dash Co., Buffalo. N. Y.

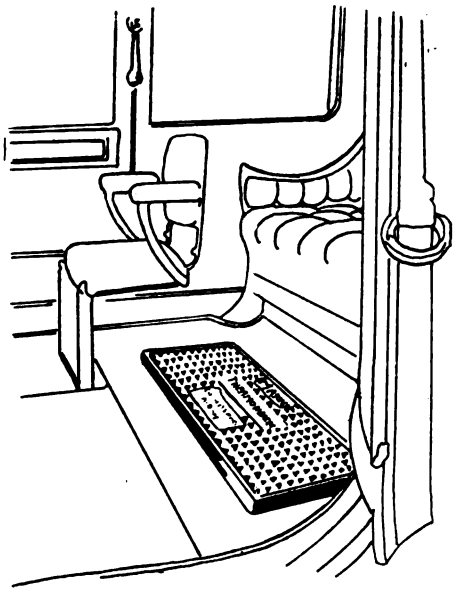


A new Shaler portable vulcanizer

Another Shaler Vulcanizer

Each of the twelve patches furnished with this portable vulcanizer is complete in itself, consisting of a patent heat unit held in a metal container that also holds the patch of raw rubber. This

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The Mason heater sets on the tonneau floor, and is thermo-statically controlled

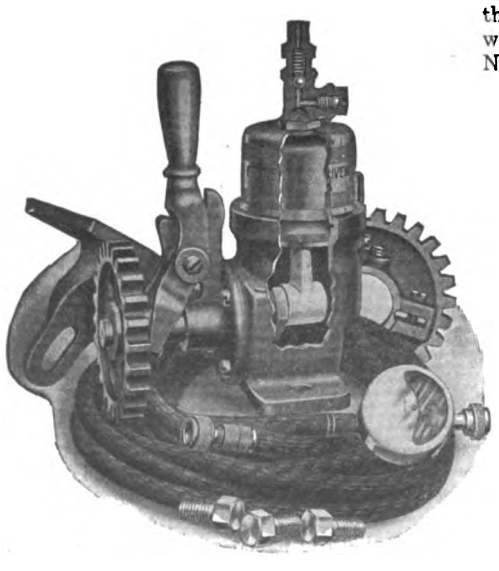
heat unit, together with the patch, is held against the surface to be vulcanized by means of a screw clamp held in a U-shaped frame. The repair may be done in 5 minutes. The clamp, a dozen patches and a piece of sandpaper comprises the outfit, which may be carried in the pocket. Price $1.50; extra patches 75 cents a dozen.—C. A. Shaler Co., Waupun, Wis.

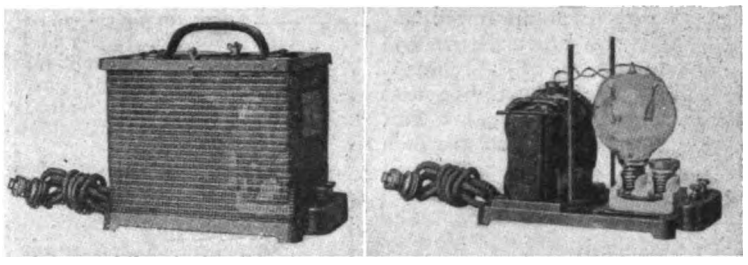
Prest-O-Grip Chains for Trucks

An anti-skid device for trucks consisting of several chains, each of which is anchored to a spoke and passes around the tread of the tire.—Rowe Calk Co., Plantsville, Conn.

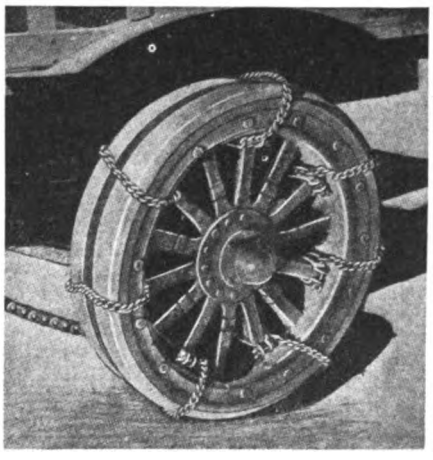
J. T. Windshield Cleaner

This device consists of a rubber strip which is mounted in a metal arm and the water on the windshield is removed by swinging the arm around over the surface of the glass, it being pivoted and operated from the inside by another arm. Price $2, attached.—J. T. Auto Devices, Cleveland.

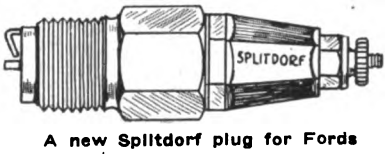




Westinghouse now offers a small arc rectifier for battery charging



The Prest-O-Grip chains for trucks



A new Splitdorf plug for Fords

New Splitdorf Ford Plug

The plug designed for Ford cars has been changed in many respects. A fish-hook electrode is now used instead of the former type, and the interior construction has been changed to give better service. A new plug, designed for tractor work, but which may also be used on standard pleasure engines, is known as the heavy Hex model. Its feature is that it is a very heavy hexagon by which it may be screwed very tightly into the cylinder. The size of this nut also makes it easier to put a wrench on it.—Splitdorf Electrical Co., Newark, N. J.

New Splitdorf Voltammeter

A combination voltmeter and ammeter designed for flush mounting on the cowl has been added. Ordinarily, it shows charge or discharge in amperes, but by pressing a button at one side the voltage is registered. There are three connections on the back, two for the ammeter and one for the voltmeter.—Splitdorf Electrical Co., Newark, N. J.

Crane Pump Oilproof

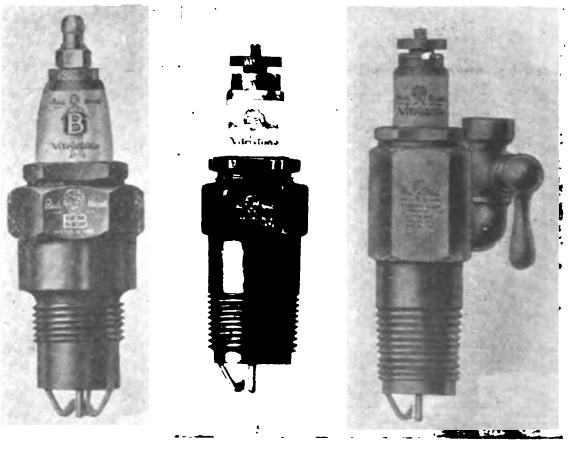
A single-cylinder, air-cooled, engine-driven tire pump in which particular pains have been taken to prevent the pumping of an oil spray into the tires. This is accomplished by a special alloy packing ring placed at the bottom of the cylinder. It fits snugly over the piston and is bevelled on both edges, so that the movement of the piston squeezes in the edge tight against it, thus preventing the passage of oil. Cylinder and piston are of pressed steel, light and strong; the crankshaft is a drop forging and the connecting rod of bronze bearing metal. The piston and cylinder are ground to size. Suction and discharge valve are of the ball type and are held closed by small coiled springs. They are both located in a fitting above the cylinder head. The pump is engaged by a spur gear on the crankshaft. Fittings are provided for all cars. Price $8.—Bay State Pump Co., 100 Purchase Street, Boston.

Small Westinghouse Charger

The type WI is a new outfit designed for charging small batteries of from one to six lead cells or up to 10 Edison cells. It is intended for the small garageman or the car owner. The rectifier bulb and transformer are mounted on a small cast iron frame with a perforated sheet iron cover. The outfit delivers a prac-

Right—A new insulator, styled Vitristone is used in the Red Head plug, to meet high speed requirements

Left—The Crane engine driven tire pump is compact, light and complete. Note the alloy packing ring at the bottom of the cylinder



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tically constant current of approximately 5 amp. Starting is accomplished by simply shaking the outfit. It is designed for 110 volts and transforms the current to 2 to 15 volts d.c. List price $25. Westinghouse Electric & Mfg. Co., East Pittsburgh.

New Red Head Plug Insulator

In order to meet the more exacting demands of the higher speed, higher compression engine, an artificial stone insulator known as Vitristone has been substituted for the porcelain used formerly in Red Head plugs. No other change has been made in the spark plug line, which consists of a variety of styles, including standard plugs and special ones, such as the ⅛-in. Ford, ⅛-in. extension for Buick, priming plug for the Ford, and many other models. A display cabinet showing the assortment of plugs and carrying a stock of 50 or 100 is furnished to dealers.—Emil Grossman Mfg. Corp., Brooklyn.

Evergood Bumpers Improved

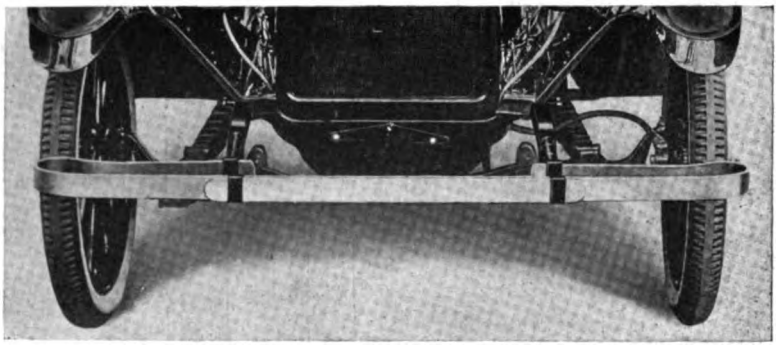
A modification in the method of attaching the bumpers has been rendered necessary by the increasing popularity of splash guards between the front frame members. With this construction it is inconvenient to use the clamps which are ordinarily supplied, as it is necessary to drill the guard. The preferable method is to use a clamp which fastens around the outside of the frame and catches in the lower channel lip; thus it is not necessary to drill the splash guard. This design of fitting has been brought out for all the popular cars which have splash guards. There is a complete line of bumpers, including a double spring bumper, which will yield, but will not break, round bar bumpers, channel bar bumpers and diamond section bumpers. Another new feature of these bumpers which, however, was described in the Before Show Issue of Motor World, is the method of rust proofing the metal, which is known as the Lohmann process, by which the metal is covered with a non-corrodable metal alloy so applied that it will not scale off, thus making the steel really proof against rust.—Emil Grossman Mfg. Corp., Brooklyn.

Combination Bumper and Tire Carrier

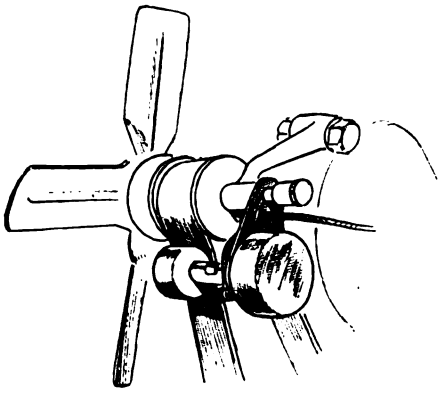
An interesting development for the Chevrolet 4-90 and the Ford is an Evergood tire carrier and rear bumper combined. The complete unit includes a bumper, a tire carrier and license and lamp bracket. Round, channel or double spring bumpers may be had and the finish may be black or nickel.—Emil Grossman Mfg. Corp., Brooklyn.

Evergood Mirrors

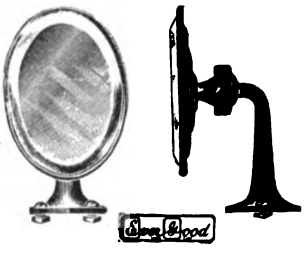
There are several new Evergood diminishing mirrors. One model is designed for mounting on the windshield and has a ball and socket joint so that the mirror can be tilted to any angle. All steel parts are finished with a double coat of black enamel and the mirror has a nickel plated or black enamel rim as desired. Diminishing mirrors of similar design are also made for fender mounting. A new design known as the minifying bevelled mirror has an optically ground lens, which reduces objects in their correct proportions and shows the true relative distance between objects. It is made as an ovel mirror, 4 x 6 in., or 5 in. round, and is designed for mounting on the fender. It is finished in black and nickel.—Emil Grossman Mfg. Corp., Brooklyn.



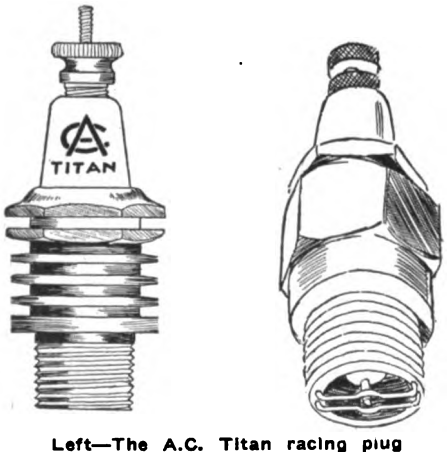
An Evergood double spring bar bumper attached to the Chevrolet. These bumpers are supplied with the round bar, channel or diamond sections



This automatic governor of the Benford light concentrator throws the current into one headlight at low speeds. It is for the Ford



The Evergood mirrors have a universal joint that permits them to be readily set in any position



Left—The A.C. Titan racing plug has several cooling fins
Right—Note the double barred knife edged electrode of the Mosler plug

Sager Bumper Features

The combined channel and diamond section bumper is attached to the frame brackets in a new way. The arm which carries the bumper has a pointed screw which goes through the bottom flange of the channel, and the point engages the upper flange. The whole is held tight by a lock nut. A new design is the spring back bumper, which consists of two members, a flexible spring, roughly semi-elliptic in form, and which is attached at its ends to a stiffer spring member which is mounted in the bracket attached to the frame horns. In case of collision the outer member first takes the shock and then the second member, and in case of a very severe shock the supporting arms themselves would take part of the blow. The importance of fitting bumpers to the rear of the car is emphasized and fittings for practically all cars are made.—J. H. Sager Co., Rochester, N. Y.

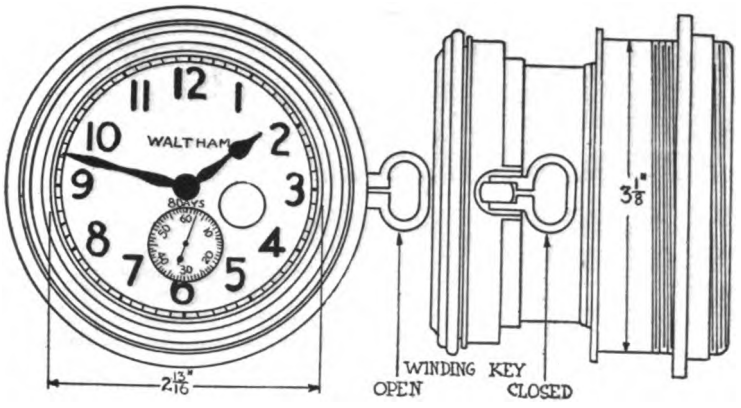
Newtone Improvements

Several slight improvements have been made in Newtone motor-driven horns. The brush holders are now integral with the motor housing and round brushes are used. The end of the armature shaft is mounted against a ball to take care of the thrust. There are now two oil ways, one at each end of the horn, to provide for ample lubrication. The cap which covers the motor is water tight. The finish is black or black and nickel, and the horn is furnished with three projectors, a short or a long one for under the hood or a flaring type for exterior mounting. Price $5.—Automobile Supply Mfg. Co., Brooklyn.

Benford Light Concentrator

A mechanical means for throwing all the current generated by the Ford magneto into one headlight bulb when running at low speed is shown. The purpose of this device, of course, is to overcome the difficulty due to the dim light obtained when both Ford headlight

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The new Waltham telescope dash clock is exceptionally thin, and neat appearing

bulbs are used in series at low speed. The device consists of a very small and simple governor mechanism mounted in a steel case and driven from an idler pulley on the fan belt. When the speed drops below a certain amount the weights of the governor come together with the result that all the current is diverted to one headlight, and as the speed increases they fly apart and both headlamps are brought into series.—Benford Mfg. Co., Mt. Vernon, N. Y.

Mosler Double Hub Plug

Although this plug has been out several months, this is the first time it has been exhibited at a show. The outstanding feature is that the insulator has a double hub or shoulder on it, so that the nut which holds the insulator in place bears on the upper shoulder so that the pressure between this point and the lower shoulder is more evenly distributed and there is less danger of breaking the insulator. The spark jumps from the central electrode to two knife edges, one on each side, which are said to remain so hot that it is impossible for carbon to collect on them, and consequently the cap cannot be short-circuited. At the same time there is no danger of burning the metal because it is made out of a special nickel manganese alloy. The price is $1.—A. R. Mosler & Co., Mt. Vernon, N. Y.

Schrader Inflating Valve

The new Schrader inflating valve is smaller and is rubber covered to protect it from injury. It looks like a spool except that there is a connection at one side for the air hose. The device slips over the opening to the tube and the air is turned on automatically by this operation and as soon as the valve is removed it is shut off. Notwithstanding the reduction in size the air passage has been enlarged to give quicker inflation, and the substitution of conical washers in place of flat washers removes all possibility of air leakage. The rubber covering is for the purpose of preventing damage to the device since its accustomed place is on the garage floor.—A. Schrader's Sons, Brooklyn.

A. C. Titan Racing Plug

A one-piece ⅞-in. plug designed for racing work and being unique in that it has several cooling fins. There are three fins below the hex, and the hex itself is only about ¼ in. thick and is slotted around the circumference so that it forms two fins.—Champion Ignition Co., Flint, Mich.

Boyce Moto-Meter Emblem

A large selection of emblems is offered at no extra charge to purchasers of the largest moto-meter. These emblems include car name plates, club insignia, fraternal emblems and initial dials. Because of the great variety of these emblems it is impossible for a dealer to stock a full line, and consequently the factory is supplying these direct at no extra charge. The only change in the line is the addition of a special Overland design, in which the stem of the moto-meter is designed to screw into the Overland radiator cap as soon as the screw which comes with the car is removed. This design may be had in all three moto-meter models.—The Moto-Meter Co., Long Island City.

New Waltham Clock Models

A new flush type speedometer, with black or silver dial, 1000-mile trip and 100,000-mile season odometers, is shown. One of the features of this instrument is a quick reset. There is a knurled knob, which is turned to set the trip figures back, and when it is desired to do this quickly, holding down a small button gears up the drive 10 times so that when the knob is turned the figures are set back 10 times as fast as ordinarily. The telescopic clock, which was brought out over a year ago, is now a double telescopic design, and consequently is about twice as thin as formerly. The clock is a cowl board design, which is particularly neat in that there is no winding or setting mechanism visible, these two operations being performed after the clock has been pulled out by twisting the rim.—Waltham Watch Co., Waltham, Mass.

Agasote Body Material

This is a wood fibre designed for use in building bodies and may be used anywhere in place of sheet metal or wood except where compound curves are required. There is a wood fibre composition which will neither check nor split, it is said, and is much lighter and cheaper than other materials. A roof of agasote for a limousine would cost about $20 where an aluminum roof would be $75, it is said. The cost of the roof is any thing from $3.15 up, depending on the design. The material is usually supplied all ready for application; thus a roof for a brougham would come already curved to put on. No nails are used in applying the material, glue being sufficient to hold it. It is capable of taking a high finish and may be worked in the same manner as wood.—Pantosote Co., New York.

Hartford Shock Absorber Change

The mounting has been improved so that the shock absorber is more efficient and will wear longer. Formerly the two arms were bolted rigidly to axle and frame, but in the new design there is a universal action at these two points obtained by the special construction illustrated. The joints are designed so that they will not become loose and rattle. It is standard equipment on such cars as the Pierce, Marmon, Stutz and McFarlan.—Edward V. Hartford, Jersey City.

New Exide Connector

A connector which facilitates the removal and replacement of individual battery cells is a new feature. The connector is bolted to adjacent cells, and thus it is a simple matter to remove a cell or replace one. This is superior to the former method, which was to burn the connections solid; thus replacement of a cell necessitated sawing the connections apart and reburning them when the new cell was put in.—Electric Storage Battery Co., Philadelphia.

Leece-Neville Roller Switch

An unusual departure in starter switch construction is seen in the new self-cleaning roller starter switch. The roller is made of copper and operates between two copper spring contacts, the purpose in using the roller being to present a different contact surface every time the switch is closed; thus pitting and other troubles are avoided. The switch is supplied in different styles for floorboard mounting and for direct connection to the motor.

A new cutout has been designed having a double contact to prevent wearing away of the points. The initial contact between the cutout members is between two cophite points. Further movement of the cutout armature closes the circuit between two silver points. The first material is designed to resist sparking and the second pair is of low resistance and actually carries the greatest amount of the current. Thus all the wear and tear is taken by the former set and the latter are for carrying the current. There are no wires between the cutout and generator, as the former is mounted directly on the latter, and electrical connection is by three screws running from the cutout to the generator. Wiring to the generator enters through a plug connection in the cutout, which is so designed that it is impossible to put it in wrong. There are two types of plugs; one has a bayonet socket, which makes it very easy to detach. The output of these generators may be regulated by

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turning a screw at one end; thus the exact needs of each individual are met. If the car is driven mainly in the city a larger charging rate is required than if the car is usually driven at high speeds in the country. The screw changes the position of the third brush.—Leece-Neville Co., Cleveland.

Corcoran-Victor Spot Lamp

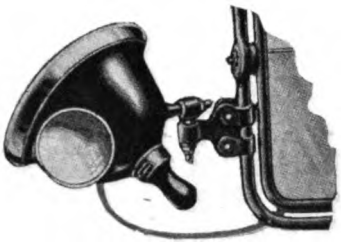
The features claimed for this lamp are ability to hold its focus on rough roads, ease of manipulation, strength of light. It is possible to turn the light on or off while shifting it, because the switch is at the rear. The lamp is conventionally shaped design, with a universal bracket for mounting on the windshield, and has a rear vision mirror set in it. The construction is unusually solid, the door is heavy steel, copper plated and nickelled, and the reflector is held in place by interlocking clips. The lamp is focused from the inside and a nitrogen filled mazda bulb is used. There are several styles of brackets.—Corcoran-Victor Co., Cincinnati.

Reel for Air Line

Two new accessories especially valuable to garagemen are an automatic hose reel for wall or post mounting comprising a drum for winding up the air hose when not in use and thus keeping it out of dirt and grease and free from kinks and other damage, and with a pressure gage attached; and an oil service cart. The reel is easily operated and cannot get out of order. The reel automatically shuts off the air when the hose is not in use. The reel can also be used for hose in filling radiators, etc. The oil service cart contains three 12-gal. tanks for light, medium and heavy oils; renders supplying oil to a car easy and clean, as the cart can be brought up to the car and the oil pumps out through a hose, thus obviating spilling of lubricant. These carts are also made with two tanks.—United Engine & Mfg. Co., Hanover, Pa.

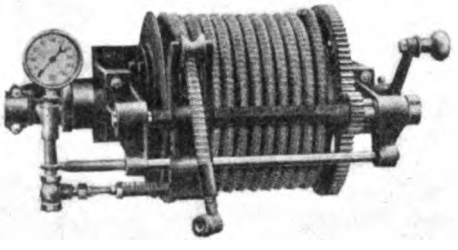
Runningboard Mat

In addition to their line of reamers and other tools for Fords and other makes of cars Stevens & Co., New York,



A universal bracket, handle switch and diminishing mirror are some of the features of the Corcoran-Victor spotlight

are exhibiting some new devices, prominent among which are a runningboard mat, price $2, consisting of transverse rods covered with leather rings and each rod linked to the next by a series of leather strips, and the Ever-Right gasoline gage for Ford cars. This gage comprises a shellacked cork float secured to a metal bobber, which is



The United Engine & Mfg. Companies' air hose reel is a much needed device

notched to indicate the amount of gasoline in the tank. This bobber works through a metal cap which fits the Ford tank and which has a swivel to lock the bobber down when a reading is not required. Immersion of the float and bobber is claimed to reduce swishing of gasoline in the tank. When filling the tank no misplacing of the cap is possible and losing the cap is obviated. Price $1.—Ever-Right Products Corp., New York.

Cutout for Fords

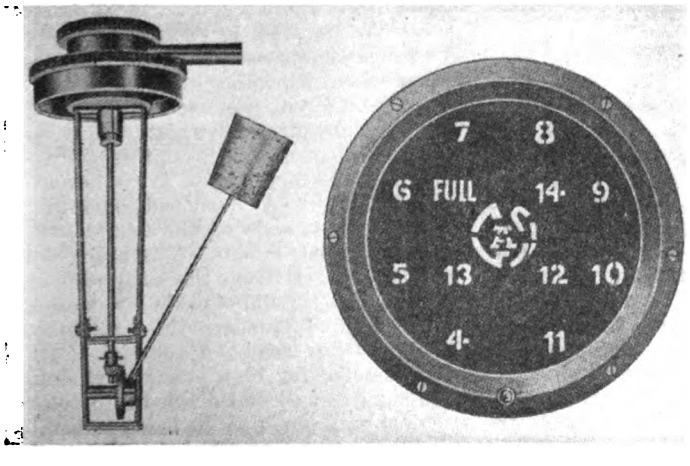
At the Petry exhibit a new cutout for Fords which sells for $3 complete with pedal and chain is in evidence. This differs from the standard model only in the shape of the lever, which is changed to facilitate mounting on the Ford. No adjustment is required on the lever, this feature being on a larger model and doing away with the use of pulleys in most instances. The Ford type can be put on in 30 minutes, and only one hole has to be drilled in the floorboard. The Petry company has also prepared a very complete list of cars alphabetically arranged in 1914, 1915 and 1916 models, with the size of cutout required for each. The Anthony single-acting, single-cylinder hand tire pump is also exhibited. This pump is finished in polished brass and black enamel, and is unusual in the nicety of the design and the excellence of workmanship, which are its especial features. Price $4.—N. A. Petry Co., Philladelphia.

New Quick-Change Drill

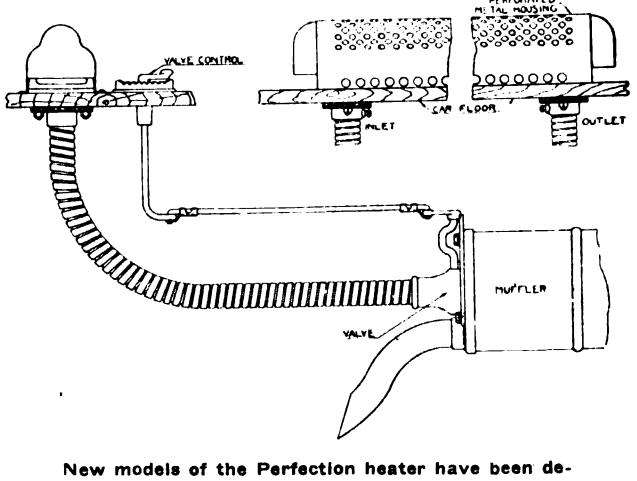
Though Sipp quick-change-speed sensitive drill presses have been on the market for some time, a new feature is evident at the show this year in a regulation of power feed to the spindle. A capstan wheel when pulled down by hand automatically throws on the power feed and as soon as the drill passes through the work the mechanism automatically returns to its original position. A feature of the exhibit is a machine for drilling four-speed oil holes in crankshafts and equipped with a universal table, which can be tipped to any angle, the entire outfit swinging around a column.—Sipp Machine Co., Paterson, N. J.

Cadillac and Packard Perfection Heaters

Perfection heater models have been augmented by the addition of models for Cadillac eights and Packard twin sixes. There is an inlet at each end to take care of the exhaust gas from each type and an outlet in the center. Heating tubes are protected by a perforated metal guard designed for strength without interfering with air circulation. The Cadillac type with oxidized brass housing ready to install sells for $32.50. For floor type heater the standard type A



The Plunkett Electric Gasometer tells the amount of fuel in the tank, and gives warning when it is low



New models of the Perfection heater have been designed for the Packard twin six, and the Cadillac 8

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can be connected to each exhaust pipe, this outfit costing $31. In the Cadillac Victoria the type A is satisfactory when connected to the right hand exhaust pipe only. Price $25.—Perfection Spring Service Co., Cleveland.

Autocraft-Bovey Heater

The exhaust gases are by-passed from the exhaust pipe through a flexible steel tube into the radiator, passing successively through three large coils. These coils are housed in a metal container secured in the floor and so arranged that the cold air is drawn through the sides of the register plate over the heating coils, warmed and sent through the register into the car. A dash plunger actuates the valve connecting the heater with the exhaust pipe, allowing the driver to control the heater and set it at any desired point. It may be installed in any car in about 90 min. The price is $25.—Craftsman Motor Corp., 2815-31 Wabash Avenue, Chicago.

Autocraft Spark Plug

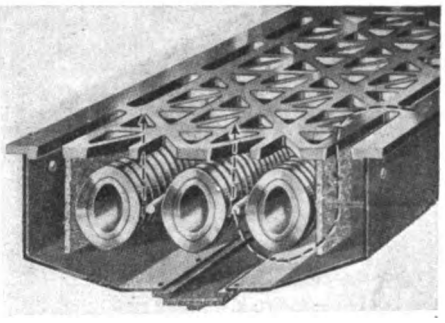
The sparking electrode of this plug is a slotted steel chamber holding a movable steel ball and so arranged that the ball is always at an exact distance from the central electrode. Due to the force of the explosions and the movements of the car this ball is in constant motion, bringing new surfaces into sparking contact and by impact removing and preventing the formation of carbon. Made in all sizes for all cars, the plug sells for $2.—Craftsman Motor Corp., 2815-31 Wabash Avenue, Chicago.

Kelly Wire Wheel

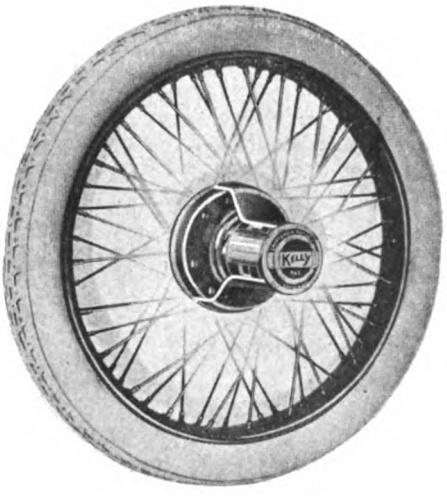
This wheel is of conventional form, but it can be removed or replaced in 6 seconds, it cannot stick, it cannot be thrown off the hub, the hub cap is not called upon to do any work but is merely a dust cap. There are three parts—the wheel, the hub and the hub sleeve. There are lugs on the hub and the wheel, and the two are securely locked by the driving sleeve, which slips in between the two. The sleeve is retained by a spring plunger, and then as an additional safeguard and to keep dust out, the dust cap is screwed in place. To remove the wheel it is merely necessary to unscrew the dust cap, pull out the driving sleeve, give the wheel a quarter turn and pull it off. Replacement is just the opposite. The dust cap is so arranged that it may be removed with a monkey wrench. The wheel is a standard triple-laced type with Goodyear rim. It is made in all sizes, including Ford, and is priced about the same as other high-grade wheels.—Craftsman Motor Corp., 2815 Wabash Avenue, Chicago.

Plunkett Electric Gasometer

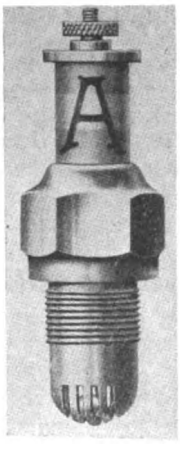
A gasoline indicator that permits the driver to see at a glance the amount of gasoline in the tank, and one that automatically indicates when the supply has dropped to 4 gal. It is in three parts, the first a float device, progressively making and breaking an electric circuit as the fuel level changes, the second a dash mounted indicator, consisting of small electric lights placed behind numbers cut in the dial, and the third, a single dry cell and wiring connecting the two. Pressure on a button in the face of the dash meter throws the light on behind the number corresponding to the amount of fuel in the tank, and when the supply has dropped to a dangerous level, a center warning light is thrown on. Installation may be made in any car. The price, $15.—Plunkett Electric Gasometer, 62 East 90th St., New York.



Section showing construction of the Autocraft-Bovey heater. Note the fins on the heating coils, and the passage of the air shown by the dotted line



The Kelly wire wheel may be removed or replaced in an instant, and is positively locked in place by a snap pin



The Autocraft spark plug has an ingenious electrode

Gould Has Gold Battery

Featuring the Gould Storage Battery Co. exhibit at the Grand Central Palace is a replica of the Gould battery recently shipped for the use of His Majesty Alphonso XIII, King of Spain. The battery is a regular 6-volt type with rubber separators and burned cable terminals, but it is encased in a beautiful ebony box inlaid with mother-of-pearl and the handles are gold-plated.

Answer Skid Chain

A new type of anti-skid device, exhibited for the first time, consists of two cones attached to the rear axle having fastened in it six chains 6 in. in length. Each cone may be lowered mouth downward so that an edge revolves against a friction disk attached to a rear wheel. The rotary motion causes the chains to fly out in a fan shape under the wheel. At any time when the brakes are applied at least two chains will be between the tire and the ground. Price per set, attached, $25.—Hill Insulating & Mfg. Corp.

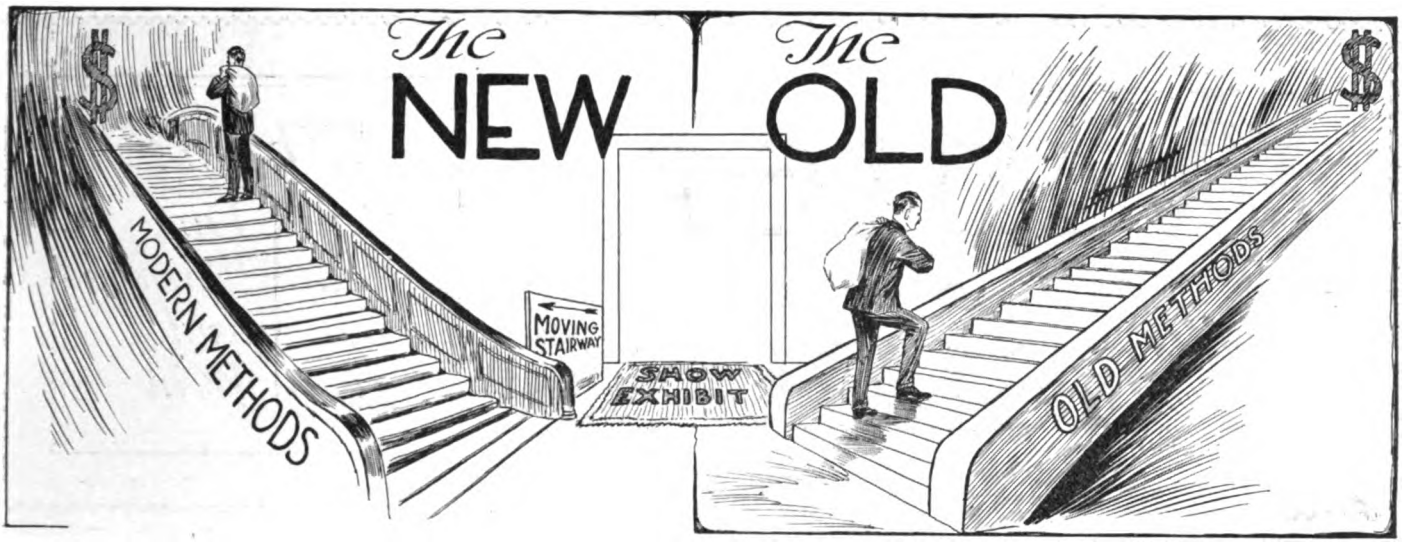
Sparton Vacuum Feed

This vacuum tank is cylindrical and holds about a quart. It is divided into two chambers, the upper one being suction and the lower discharge. The upper chamber is connected to the manifold and to the gasoline tank, and a float operates the valves. Flow to the lower chamber is continuous through a flap valve, and gasoline in the lower chamber is maintained at a constant level in it. It is said that the tank cannot be drained under high speed with throttle wide open, and that 5 seconds of cranking is sufficient to fill the tank when it is empty. The vent to the upper chamber is connected to the lower by a small pipe, so that there is no danger of gasoline splashing out when the upper chamber is full.—Sparks-Withington Co., Jackson.

New Corbin Speedometer

A new universal joint for front speedometer drive, a special hanging speedometer bracket for Fords and a 160-mile speed dial instrument are new things at the Corbin exhibit. The new universal joint is featured by being easily adjusted and disassembled for cleaning, lubrication, inspection or replacement of parts, and is entirely enclosed as protection against dirt and moisture. It does away with grease cups at this point, as all the necessary grease is contained in the housing. A hardened bushing is used on both ends of the flexible shaft in Corbin instruments. The bracket for Fords suspends from the cowl edge and carries the regular Corbin speedometer for Fords. It renders the speedometer more easily read. A special Corbin speedometer for high speed work has a 160-m.p.h. speed dial divided into colored segments, from 0 to 40 being green, 40 to 80 black, 80 to 120 blue, 120 to 160 red.—Corbin Screw Corp., New Britain, Conn.

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By Ray W. Sherman

THE Sayanna show, which always preceded the Callawassa show by a few weeks, was a pretty fair show. There were lots of cars and fairly good decorations. Reilly and Tommy Trumbull, the Sennett dealer's junior salesman, had taken it all in. They were as full of show as a repairshop is full of leaks.

"Some fine; some fair; some rotten!" remarked Tommy, as, hitching his overcoat up and his undercoat down, he cast a last sidewise squint at the show before he passed out by the big ticket-taker for the last time.

The Wrong Slant

"Right you are!" agreed Reilly, lighting up, now that they were outside forbidden territory. "Some fine; some fair; some rotten!" He laughed. "It beats me, Tommy, why some dealers simply can't or won't see the modern side to this motor car business. Some of them would be right at home in a backwoods implement store or a would-be garage. They have the wrong slant on things and don't seem to be able to get over it."

"Some of the exhibits were good," defended Tommy, who always defended if it would assure an argument.

"Yes, Truman's was fine! And one or two others were a little better than the ordinary; but so many were just nothing-at-all. They ran the cars into the spaces and let them stand there—just like a garage. They paid good money for the spaces—and then threw the money away by not throwing more after it."

"Huh!" said Tommy.

"The more I think of it the more I think it's just habit, Tommy, this not staging good show exhibits. There must be something like that the cause of it. These same dealers who don't stage good show exhibits will spend money for advertising in newspapers, but they won't spend money in making their show exhibits an advertising asset. They spend just enough to get into the show—and then stop. It's like running one ad once and then ceasing to advertise until next year.

"One ad run once and stopped is wasted money. It is a succession of ads that counts, and it's money spent on a show exhibit that makes the exhibit worth while. As to why the dealers don't do it, that is another chapter of the story. The average dealer spends money on newspaper advertising. Why does he do it? He does it because business men have been educated up to the point where they believe they must do some advertising to stay in business.

"And who educated them? The newspapers did it. The newspapers saw their big future lay in advertising, and they set out to educate the business world to the advantages of advertising. And the business world gradually came to believe that advertising is good, and so everyone in business advertises in the newspapers. That's one reason why men will use newspaper advertising when they never think of using a booklet or a form letter, or spending money on a show exhibit.

The Why of It

"And as to using letters and booklets and dressing up show exhibits, that, to the average dealer, doesn't seem as good an investment as does newspaper space, because the dealer is only partly educated in advertising. No one has gone after him on this exhibit question as the newspapers have kept after him on the newspaper-advertising question, and the result is that his development is one-sided. He believes firmly in newspaper space, but he can't see any excuse for spending money on a show exhibit.

"Now, as a matter of fact, money spent on a show exhibit is the best advertising investment a dealer can make—even if he doesn't realize it to-day. It can do more to put his car across in a territory than all the ads he will run during show week. Of course, the exhibit should be supplemented by ads.

"The dealers' associations which hold the shows could do a fine thing for the industry if they would form a committee of some kind to take up this matter of exhibit decoration and arrangement. This committee could make a study of the matter and recommend and inspect. It could work wonders in any show and could do a great deal to educate the trade to that higher merchandising level which must come eventually—and why not now?

Hard-Headed Perspective

"But so many of the dealers' associations look only at the hard-headed business side of things. So long as they can make money they give no heed to the real merchandising side of things. They say: 'We have a big show, we sell cars, and why should we fuss with all this monkey-work?' They, too, have lost sight of the fact that the whole trade has been coasting to success, pushed by the public. And about now we've got to begin to push ourselves.

"Also, these hard-headed business men who can't see anything but dollars are making money in the hardest way. They are tearing their heads off after business. They are working a lot harder than is necessary, because they haven't tackled the science of business and selling and don't know the easiest ways of getting the almighty dollar.

"The hard-headed business man is like a man struggling up a flight of stairs to get the dollar. The real, modern merchandiser rides up on a moving stairway and gets the same dollar. Nifty salesrooms and well-planned and well-run show exhibits are part of the modern idea. The old stuff is slated to go sooner or later, and the wide-awake dealers are getting away from the bare-floor garage-type exhibit and are getting on the moving stairway."

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Winter Business

Which?

Wait	*Do*
Wait	*Things*
and	*and*
?	*Win*

Winning Out

Kept 4 Men Busy So Far—And No End in Sight Yet

That's what the Saratoga Springs Garage Co., Saratoga Springs, N. Y., says in a letter to Motor World. It USED AN IDEA in Motor World's Winter Business Campaign and has made a lot of money—and expects to make a lot more.

That's the way to do it. USE IDEAS. This garage sent out a form letter to its list, formed according to one suggestion in this department or in the Winter Business Number, we don't know which. All we know is that the idea worked—and WORKED WELL. Here is the letter:

Strict Accountability

You are invited to call and allow us to give you an accurate estimate on your motor car overhauling or repair work, and hold us to strict accountability as to price and thorough workmanship.

If you take the same pride in the running ability of your motor car that we do in making one mechanically perfect we ought to get together. Intricate and unusual motor troubles as well as general repair and machine work is our specialty. We charge all new parts at cost from the manufacturer—that is should a Pierce need wrist pins or a Packard new bearings, these are purchased from the Pierce or Packard Motor Car Company and rebilled without advance in price. No charge for winter storage on cars overhauled.

We shall continue to maintain the same high standard of efficiency in all departments that has met with such hearty response and given us a steady increase of satisfied patrons and friends who demand and appreciate high-class mechanical skill, courteous and intelligent treatment and thorough motor car service.

Mr. Orange Roads, the head of the mechanical department, invites his old patrons to call and will be pleased to number you among his satisfied motor car friends.

Yours for service,
Saratoga Springs Garage Co.

Here's a Good Letter

MR. FORD OWNER,
Rockland County.
Dear Sir:

You, as a member of the Happy Ford Family, will no doubt be interested in the announcement that our garage has been completed, which means that we are now in a position to take care of all your repair work.

We wish to impress upon you that we employ only expert mechanics, men who have had years of experience on Ford cars. You can appreciate the fact that this means efficiency, that your work will be attended to in the proper manner with the least possible delay.

The shop is fitted up with special Ford machinery, made to handle each unit of the Ford car. This means that the work can be done in about one-third of the time that it takes a shop not equipped with this machinery.

We will maintain a complete stock of all Ford parts, thus eliminating the delay incurred by depending upon others for parts. Should you have a breakdown ANYWHERE on the road, one of our service trucks will be quickly dispatched to your rescue.

The Long Island City plant of the Ford Motor Co. has discontinued all repair work. Our plant will be just as complete as theirs, and it will be our aim to give the best of service.

Our new garage is located on Main Street, Spring Valley.

Assuring you that we will appreciate your work, and thanking you in advance, we are,

Yours for efficiency and service,
THE JUDGE AUTO CO.,
Spring Valley, N. Y.

Mr. Dealer

Are you working hard on your prospect list? Are you making calls, following up prospects and trying to make sales, even though it is winter?

A WINTER SALES PLAN WILL MAKE MONEY FOR YOU.

Mr. Garageman

Are you sending out letters and making calls in an effort to keep your repairshop full of overhaul work, even though it is winter?

A CAMPAIGN OF THIS KIND WILL MAKE MONEY FOR YOU.

Mr. Manufacturer

Are you helping your dealers get Winter Business? Are you working out sales and business suggestions that will help them? Are you, instead of telling them to TAKE YOUR GOODS, showing them HOW TO SELL THEM, even though it is winter?

EFFORT OF THIS KIND WILL MAKE MONEY FOR YOU.

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Put the Winter Touring Idea in the Public Eye

***THIS** is part of the Winter Business campaign being waged by the Colt-Stratton Co., New York, which has a fine show window at 1770 Broadway. This winter setting does more to get the winter driving idea across than could reams of literature. It shows the prospect that a winter car is almost a necessity*



Two Ideas from the Litchfield Auto Co., Litchfield, Minn.

They were conceived by a man in a town of 2500 people. They got Winter Business for him. They will make money for YOU

Battery Letter

Dear Sir:

No doubt you know from experience that your storage battery requires very regular attention. If this attention is not given it the results will be not only serious but costly.

Inclosed you will find a storage battery service card which entitles you to free inspection, testing and filling your battery with distilled water every two weeks, regardless of the kind of battery you have. You will notice that the card is so arranged that you will have a complete record of the battery, including the date tested, hydrometer reading and when distilled water was last added.

By the hydrometer reading we know the internal condition of the battery, and to be the most efficient and longest lived, it must be kept fully charged at all times. If after two or three tests have been made, the hydrometer readings show that the battery is not up to the standard, it is then time to look to the generator and make the necessary adjustments to keep the battery fully charged.

The storage battery is perhaps the only part of your car that does not carry some kind of a guarantee. It will depreciate much faster from standing idle than from being used every day, and unless it is fully charged and kept in a warm place it will freeze very easily. Freezing will break the rubber jars that contain the elements and solution and the battery will be of no further value until the jars have been replaced with new ones and new solution put in. This is a costly operation and should be avoided. The safest and cheapest plan is to store your car in our warm garage or bring your battery to us where it will receive proper care and attention during the winter months.

This attention guarantees the delivery of your battery in as good or better condition than when you brought it in.

Accessory Letter

You may soon need some goods carried by us—and we want your business.

Do you know any reason why we can't get together? There are several why we should.

Our stock is the best money can buy, the best the market affords.

Columbia batteries are standard and are representative of our carefully selected stock.

We can guarantee this stock because manufacturers of nationally advertised articles always stand behind their products.

This is the best kind of insurance for satisfactory service, and that's the kind offered.

Come in yourself and find out—don't take our word for it.

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(No. 1001) CLUTCH SPRING COMPRESSOR

Though designed primarily for the Paige, this compressor could readily be modified to meet the requirements of many cars. It was quickly made of a short piece of 2-in. angle iron drilled to bolt onto the rear engine frame and carrying an old clamp-screw in the manner shown. As the angle iron is too thin to be tapped, a tapped block is placed on the inner side, as illustrated.—S. E. Barber, Hodskin Garage, Canton, N. Y.

(No. 1002) TAP AND DRILL STAND

A systematic and efficient method of storing taps is illustrated. Wooden compartments, nailed to the bench, carry the taps, tap drills, dies and wrenches, all in a small space and near the vise. Another advantage is that the tap drill is just below the tap and both may be taken out at once.—Frank Lindenthaler, Chevrolet Service Station, New York.

(No. 1003) ADJUSTABLE BENDING BAR

This adjustable bending bar is suitable for straightening any bent member having a rectangular or I-beam section. It is forced from a 1 x 1¼ bar of machinery steel, and the sliding head is made slightly loose for on the handle so that it may pinch when the bending force is applied.

(No. 1004) WELDING TABLE

Oxy-acetylene welding is facilitated by the use of a table that permits the work to be securely clamped in place, yet is not damaged by repeated contact with the welding flame. A suitable table is shown, and is angle iron, welded together, the top being asbestos placed on sheet metal.—S. E. Barber, Hodskin Garage, Canton, N. Y.

(No. 1005) WRENCH FOR TIGHT QUARTERS

In those places that it is only possible to obtain a part turn on a nut the use of the double-cut wrench shown will facilitate the work. It is made of an old spring leaf, annealed, the hexagon being first cut and filed in the ordinary manner, and then similar hexagon corners being cut at a point half way on each of the faces. This permits a part turn to be given to the nut, when the wrench is lifted and the following jaws used.—Frank Lindenthaler, Chevrolet Service Station, New York.

(No. 1006) STRAIGHTENING TWISTED AXLES

A long and heavy I-beam, drilled to permit the front axle to be bolted on in the manner shown, offers an excellent purchase for the application of straightening forces to axles twisted between the spindle and spring seat. The straightening force may be applied either through a bending bar, a heavy wrench or through a rod placed in the spindle holes. Light axles may be straightened without heating; heavy axles must be heated before bending.—S. E. Barber, Hodskin Garage, Canton, N. Y.

(No. 1007) EMERGENCY PISTON LAP

When all other piston laps are in use, or none are at hand, an old piston may b cut down and rigged into a satisfactory lap. The piston is cut across at the wrist pin and the head drilled and tapped to take the handle in the manner illustrated. Two of the new rings to be fitted into the cylinder are placed on the piston, and both the piston and cylinder lapped to a fit together.—Frank Lindenthaler, Chevrolet Service Station, New York.

(No. 1008) TIRE RACK

A complete stock of tires may be systematically stored in a small space by the use of the tire rack illustrated. Vertical posts, running from the floor to the ceiling, carry transverse members that hold the lengthwise strips of the rack proper. The tires are stored in two tiers, the tires of the upper tier being readily accessible by means of a portable ladder that hooks onto length of pipe fastened to the sides of the rack.—S. E. Barber, Hodskin Garage, Canton, N. Y.

(No. 1009) STRAIGHTENING BENT AXLES

Front axles that are bent between the spindle and spring seat may be straightened by clamping them to a short length of 6-in. I-beam, as illustrated. The clamp is attached to the I-beam through a square hole cut for that purpose, this permitting the force to be applied directly to the axle. Though small axles may be straightened cold, it is usually advisable to heat the heavier axles at the point of bend before applying the straightening force.—S. E. Barber, Hodskin Garage, Canton, N. Y.

(No. 1010) FRONT AXLE GAGE

By the use of the gage illustrated bent front axles may be tested; the amount they must be bent back indicated and the final accuracy of the job determined. It is thin strip steel, long enough to rest on both spring seats, and still permit the adjustable angle-end to touch a rod placed through the spindle holes in the manner shown. If only one end of the axle is bent the gage may be set by placing a rod through the other end; if both are bent, the gage must be set from an axle that is known to be straight.—S. E. Barber, Hodskin Garage, Canton, N. Y.

Send That Short-cut

NO doubt you think it too simple—but the simple things are the best ones.

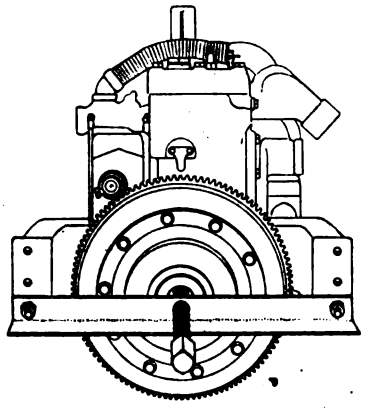
Or you do not feel that you can make a good sketch—then make a poor one. We have a staff of artists that can interpret almost anything you send in.

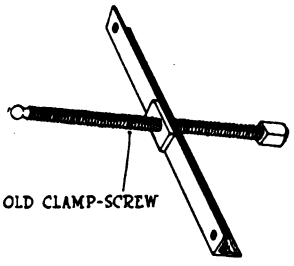
You are not an editor—but if you tell us what the thing does, and how it does it, we will do the rest.

Take an old time card, or a postcard, or a scrap of wrapping paper, or anything, sketch the device, tell what it does, sign your name and address, and

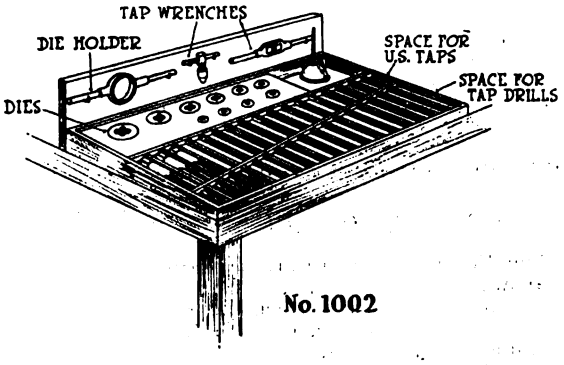
SEND THAT SHORT-CUT

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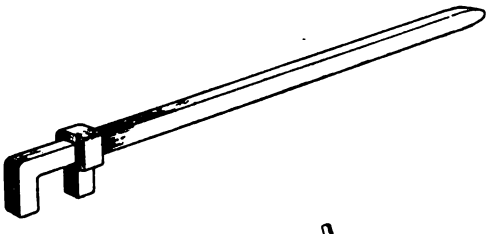




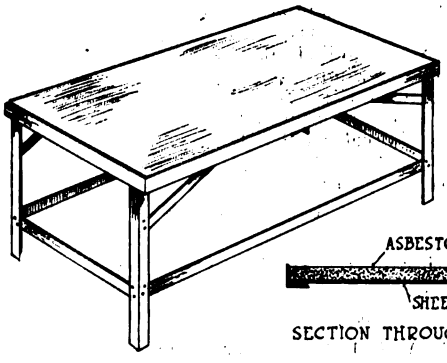
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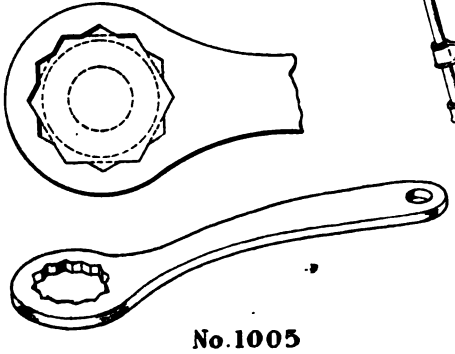
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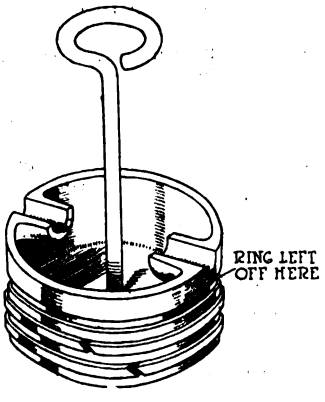
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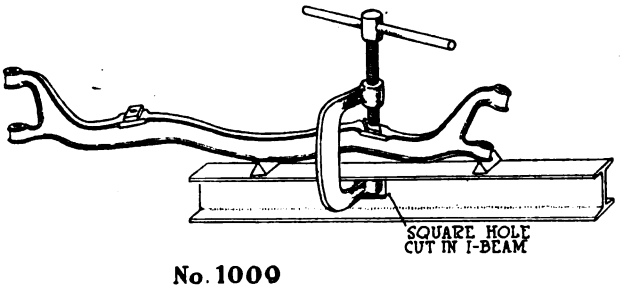
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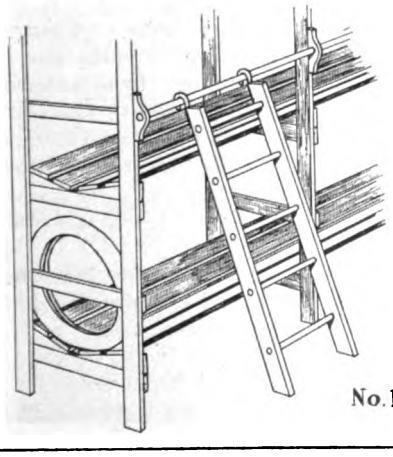
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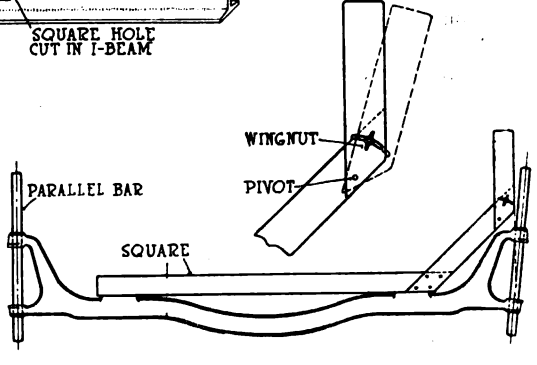
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Accounting and Business System

Rebating on Oil

System Editor: I am returning herewith answer to a previous question on the Accounting System which is not quite clear to me, and would also like your opinion on the following:

We purchased of the Indian Refining Co. $22.30 worth of oil and gas and in payment gave them our check for $20.30 and returned two barrels. In making the entry we handled it as follows: Debited stock account $22.30, credited cash $20.30, and on the credit side under All Other Accounts entered $2 as credit on two barrels returned. Is this correct? — ROBERTS BROS., Riverside Garage, Medford, Ore.

We thank you for correcting our letter of Nov. 14. In the second paragraph we should have said Credit instead of Debit, and we are returning the letter with the corrections.

Regarding your purchase from the Indian Refining Co., the entries that you have made on this transaction are perfectly correct.

Mixed on a Trade

System Editor: We are writing to you for information in connection with your system of garage accounting. For instance, take a car sale where a new car has been sold and a used car taken in trade. The used car was unsold for several months after the new car was delivered. How would you determine the profit and loss for each month that the new and used cars were sold; that is, assume the used car was sold for $100 below the allowance price; would the month in which the new car was sold show a profit, and then the month in which the old car was sold show a loss? —LA FRANCE GARAGE CO., Elmira, N. Y.

In order to make the answer clearer, let us take an example of the car that you have sold and we will consider that this car was sold for $1,000, and that you received in payment for this car $500 in cash and a used car which was valued at $500. Your entry would then be as follows:

You would credit your Income Account, Car Sales, with $1,000, and under All Cash Received on the debit side you would place the $500 in cash. Under All Other Accounts you would enter $500, and charge this amount to Car Stock, Used Cars. In other words, in place of the car worth $1,000 which you had in your car stock, you now have $500 in cash and a used car worth $500.

Let us consider that this was the only sale made during the month, and at the end of the month we go to our sales column and note the number of the car that was sold, and, in looking up our costs, we find that this car cost us $800, so we make an entry on Form 2 as follows: Under the Car Sales, Expense Column, we charge an account $800 which we call Cost of Cars Sold, and on the Credit side, under All Other Accounts, we credit Car Stock $800. This credit to car stock of $800 takes this car out of your inventory or stock account and the net result is that we have an income, Car Sales, $1,000 less cost of car sold, $800, leaving a net profit of $200 on cars sold during the month.

We will now assume that the following month we have a chance to sell the car which we took in the previous month. This, as you will remember, we placed in our car stock $500. We find that we cannot make this car bring this amount and are willing to sell it for $400, or $100 less than the amount at which it is valued in our stock. We get cash for the car, and our entry is as follows: We credit Income, Car Sales, $400, and place the $400 on the Debit side in our All Cash Received column.

Now we will assume again that this is the only car sold and when we turn to our Car Sales column we find the number of the only sale, and looking up our cost records again we find this car cost us $500, so we make another entry on Form 2 on the Debit side under Car Sales Expense; we charge an account called Cost of Car Sold, $500, and under All Other Accounts, on the Credit side, we Credit the Car Inventory Stock Account.

This credit of $500 takes out of our Inventory Car Stock, the car that was sold and was valued at $500, and the net result of our operation is that we have an income, Car Sales $400, less cost of car sold, $500, or a net loss of $100 during the month.

If you do much of this business, that is, taking old cars in payment for new, I would suggest that you carry two Income accounts, one for Income New Cars Sold and one for Income Used Cars Sold, and likewise I would carry two inventory or stock accounts, one for new cars and one for used cars. In this way you will be able to tell each month at a glance the exact profit that you are making in the sale of new cars, and also if you are showing a loss on used cars taken in trade.

If this is not entirely clear to you, please advise us, giving us details, and we will endeavor to straighten it out.

Start Right

What's the use of traveling if you don't know where you're going?
Have you an accounting system that tells you what's what?
How much did you make during 1916?
What was your overhead?
What was your selling expense?
Couldn't the Motor World Simplified System of Accounting make your business more efficient? Ask our System Department?
Start right—
and NOW.

Entering Borrowed Money

Editor Motor World: We are using your Motor World Simplified System of Accounting, but there is something we do not understand. Just how to enter a certain account.

As you are probably aware, we are agents for the Ford, and not having money enough to handle all the cars shipped us, we borrowed the money from the bank, consigned the cars to the bank and insured the cars to protect the bank, and as we sell the cars we pay the money back to the bank. Won't you please tell us or show us just how to enter this transaction in our ledger?—Lynch & Dugan, Catasauqua Garage, Catasauqua, Pa.

Before buying a new car you go to your bank and borrow $1,000 on your note and the bank gives you credit for $1,000. The entry would be: Charge Cash $1,000; credit Notes Payable $1,000. You then place an order for the car and it is delivered and you pay for the same, your entry being: Charge Car stock account $1,000, credit Cash $1,000. You then sell the car to a customer for $1,200, the entry being: Charge Cash $1,200, credit Car Sales $1,200. Then you take up your note at the bank, the entry being: Charge Notes Payable $1,000, credit Cash $1,005; Interest Payable $5.

Whatever you pay for insurance on the cars we would consider an additional cost to the cars purchased, and while these cars are consigned to your bank as security, we think you would be justified in carrying them in your Car Stock until they are disposed of.

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The eighteenth in a series showing

Dealers Who Have Made Good

A. SYSTEM ELDRIDGE, Seattle, president and general manager of the Northwest Buick Co., was born in that motor town, Flint, Mich. Perhaps that explains some of his success in the automobile business. At present he heads two large establishments, one in Seattle and another in Spokane, Wash.

Besides working on a farm, clerking in his uncle's store, working in a bank, and graduating from a state university, "Pop," as his friends call him, had sufficient time left to build a few breakwaters for Uncle Sam on the Great Lakes, as well as a government coaling station at Manila.

When he came back from the Islands, he settled first in Portland, Ore., where he built a theater or two, several office buildings, and the famous Madison Street bridge, of which the center span was constructed one-half mile from the bridge and then floated down the river and locked into position. It is still there.

After these various activities, "Pop" thought he was ready for the automobile business, and selected the Buick as his car and Seattle as his headquarters. From a modest store and a sales record of 44 cars, he shot the Buick up during his first year to 188; to 480 in his second year, and since then has been doubling the number each year until now the factory can't give him all he wants.

He has extended his lines so that now he has the G.M.C. truck, the Warner trailer and the Bull tractor, and has a force of 100 men on his payroll. Now he has a big new home for the business and a big establishment in Spokane.

The Why:

WHEN cornered, "Pop" admits that one of the best trainings in the world for a successful automobile dealer is the contracting and building business. To this apprenticeship, he attributes no little of his progress.

His friends, however, declare that the successful planning, the organization, and the determination to lead—which shows in his face and which kept "Pop" awake many nights when his competitors were asleep—have placed him at the top.



A. System Eldridge

Northwest Buick Co.
Seattle

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ANGLES OF THE LAW



By George F. Kaiser

A Question

EDITOR MOTOR WORLD—Will you please advise as to which state you believe to have the best garage laws; also the address of the legal department in which same might be obtained. We wish to secure a few good laws and such changes as we see fit, in order to put the same before the coming legislature.—TONOPAH AUTO SUPPLY CO., Tonopah, Nev.

The Answer

The best form of lien law that I know of is the following:

LIEN OF GARAGE KEEPERS, AUTOMOBILE REPAIRMEN OR BAILEE OF MOTOR VEHICLES—*All persons or corporations engaged in the business of keeping a garage or place for the storage, maintenance or repairing of motor vehicles, and who in connection therewith store, maintain, keep or repair any motor vehicle or furnish gasoline, accessories or other supplies therefor at the request of or with the consent of the owner or his representative, whether such owner be a conditional vendee or a mortgagor in possession or otherwise, have a lien upon such motor vehicle and any part thereof for the sum due for such storing, maintaining, keeping or repairing of such motor vehicles, or for the furnishing of gasoline, accessories or other supplies therefor, and may detain such motor vehicle at any time against such owner or mortgagor until such sum or sums are fully paid.*

Any persons or corporation acquiring a lien under the provisions of this section shall not lose such lien by reason of said motor vehicle or part or parts thereof being removed from the control of the person or the corporation having such lien. The lien of such bailee, garage keeper or repairman shall continue and extend at all times to his right of possession of such motor vehicle or parts thereof against such owner or mortgagor until such sum is paid. In case a motor vehicle or any parts thereof are removed from the possession or control of the person or corporation having such lien, such person or corporation or bailee may, by an action in replevin, retake possession of the same from such owner or mortgagor wherever found, and in such action he shall have the amount and validity of his lien passed upon, determined and enforced.

Although the above has not been enacted into law by any of the States, it unquestionably is far superior to the lien laws which have been enacted, as can be seen by examining the following compilation of lien laws. It is more liberal than any State law except that of New Jersey. The New Jersey law is being attacked at the present time on the ground that it is unconstitutional and therefore would not be a good example to follow. The present New York law, while a good one, does not give the protection that the above draft does.

If any State enacts the above into law and then in addition passes an act like the Maine Act shown below, it will have given its garagemen and motor vehicle dealers full protection. Such enactments will not be passed, however, unless the garagemen start the ball a rolling. I congratulate the Tonopah Auto Supply Co. on setting such a worthy project on foot for Nevada.

ALABAMA

Mechanics who contribute labor and materials toward the repair and improvement of vehicles have liens for their charges, which liens must be enforced by attachment within 6 months after the last item of material is furnished or the last item of labor is performed. Section 4785 Code of Alabama, 1907.

ALASKA

Persons who bestow labor on an article of personal property at the request of the owner have a lien upon the property on which the labor was bestowed and may retain possession of such property until their charges are paid and sell it at public auction if their chrarges are not paid within 30 days, provided, however, that 30 days' notice is given before the sale. The claim must be filed within 60 days after the completion of the work. Laws 1915, Chapter 5.

ARIZONA

Mechanics and artisans have liens for the amount of their charges for work done on personal property, but this lien expires in 6 months, unless suit is instituted. Section 3673, Chapter 5, Revised Statutes.

ARKANSAS

This state has no specific garageman's lien law, but has a provision that mechanics, blacksmiths, wheelwrights and material men have liens for labor and materials furnished in repairing vehicles. The supreme court held, in the case of Sheldon vs. Little Rock Auto Co., 146 S. W., page 129, March 25, 1912, that a garageman is a wheelwright under this provision of law and has a lien for labor performed by him and materials furnished in repairing a motor car. He must file an itemized statement of his account with the Justice of the Township where the debtor resides or where the property on which the lien is claimed is located, which description must be verified by affidavit. Kirby's Digest, Sections 5013, 5016.

CALIFORNIA

Every person who, while lawfully in possession of an article of personal property, renders any service to the owner thereof by labor or skill employed for the protection, improvement and safe-keeping or carriage thereof, has a special lien thereon, dependent on possession for the compensation, if any, which is due to him from the owner for such services; the person who makes, alters or repairs any article of personal property at the request of the owner or legal possessor of the property has a lien on it for his reasonable charges for the balance due for such work done and materials furnished and may retain possession of the property until the charges are paid . . . and garagemen shall have a lien, dependent on possession, for their compensation in caring for and safe-keeping motor cars. Section 3051, page 1010, Supplement to Notes and General Laws of California, entitled "Liens on Personal Property for Services Thereon."

COLORADO

Mechanics have liens upon articles of personal property when these are made, altered or repaired at the request of the owner.

CONNECTICUT

Garagemen and repairmen seem to have no liens in this state for storage or repairs, etc.

DISTRICT OF COLUMBIA

Any mechanic or artisan who makes, alters or repairs any article of personal property has a lien thereon for work done or materials furnished and may retain such article until his charges are paid. If they are not paid within 6 months, he may sell such property at public auction.

FLORIDA

Any person has a lien on personal property when he performs any labor upon or with any engine, machine, apparatus, fixture or implement, or upon such engine, machine, apparatus, fixture or implement, and for manufacturing, repairing and altering articles or things of value. Suit must be brought on claims of this kind within 12 months from completion of the work or the furnishing of the last item of material.

GEORGIA

This state has no specific statutory garageman's lien law, but mechanics have liens on personal property upon which they have worked. In the case of Boughman Automobile Co. vs. Emanuel, 73 S. E. 511, January 10, 1912, a garageman's right to a "mechanic's lien" for labor performed and materials furnished in repairing a motor car was recognized.

IDAHO

Persons making, altering or repairing an article of personal property at the request of the owner have a lien for reasonable charges and may retain possession of the property. If the charges are not paid within 2 months, the garageman may sell the property at public auction on 10 day's notice after advertising in a newspaper in the county where the work was done or posting a notice in three of the most public places, if no newspaper is published there.

ILLINOIS

Illinois has no garageman's and repairman's lien law. It was decided in the case of Rehm vs. Vaill, 185 Illinois Appeals, 425, that a dealer has no lien on motor cars for storage or supplies like gasoline and accessories. A lien law was introduced at the last session of the legislature but failed of passage. There is a general lien law in this state, giving mechanics, etc., a lien for improvements on personal property, but this law only applies where they have possession of the property.

INDIANA

Every person, firm or corporation, or others engaged in storing or furnishing supplies for or repairing motor cars or trucks or motorcycles, or every person, firm or corporation, or others maintaining garages shall have a lien on such motor car, motor truck or motorcycle for storage charges or charges for keeping any such vehicle or for furnishing supplies for repairs.

The dealer must file his lien in the office of the Recorder of the county where the work was done within 60 days after the last item of work is done or the last item of

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material is furnished. The notice must show the amount claimed by the dealer and must also describe the vehicle. The lien must be foreclosed within one year by filing a complaint in the circuit court of the county where the vehicle is located. Chapter 156, Laws of 1915, Indiana.

IOWA

Persons having personal property in their possession to which they have imparted additional value by their labor have a lien for their charges thereon where there is no special contract for such lien.

KANSAS

Blacksmiths, horseshoers, wagon makers, etc., are entitled to liens for improvements on vehicles and other chattels upon which they have performed work or furnished materials. Chapter 28 Laws of 1913. In the case of Olsen vs. Orr, decided in the supreme court, this lien law was held to be applicable to cases where work is done on motor vehicles, but that the lien is lost when possession is given up, unless a statement is filed with the Register of Deeds of the county within 3 days after the work is done.

KENTUCKY

There seems to be only a common law lien in this state.

LOUISIANA

All owners, operators, or other persons operating a garage, or other place where automobiles, or other machinery are repaired, shall have a lien or privilege on the automobile, or other machinery repaired, for the repairs and labor performed on the same; provided, that the privilege herein granted shall not exist for a longer period of time than ninety days after said repairs are made, and provided further, that this privilege shall have no effect against bona fide purchasers of said machinery, without previous notice.

MAINE

Persons have a lien for labor expended in the improvement of personal property. At a recent session of the legislature an act was passed which provided that whoever puts a motor car in a public garage, or other place where cars are stored for hire, and without having an express agreement for storage, procures accessories or accommodation for himself or said car, and with intent to defraud the owner or keeper of said garage removes or causes to be removed any such car from such garage without paying the reasonable charges due for repairs, supplies, accessories or accommodation furnished thereon, shall be punishable by imprisonment not exceeding 3 months or by a fine not exceeding $100. In order for the owner or keeper of such a garage to obtain the benefits of this act, a printed copy must be posted up in some conspicuous place in the garage. Chapter 214, Laws of 1913 Maine.

MARYLAND

Persons altering or repairing personal property at the request of the owner are entitled to a lien on such personal property when it is kept in their possession.

MASSACHUSETTS

Persons maintaining public garages for the storage and care of motor cars and other motor vehicles which are brought to their premises or placed in their care by or with the consent of the owners thereof, shall have a lien upon such motor cars for proper charges due them for storage and care. Chapter 300 Acts of 1913 of Massachusetts being entitled "An Act Relative to Liens by Persons Maintaining Public Garages."

MICHIGAN

All garagemen who furnish labor, gasoline or supplies by express or implied contract have a lien on all motor cars, etc., stored, maintained and supplied or repaired or furnished with gasoline, electric current and accessories when these things have been furnished at the request or with the consent of the owner. The vehicle may be detained at any time within 90 days after the last item of work was done or the last item of material was furnished. Dealers may advertise if they are not paid within 90 days after serving a claim of a lien and an itemized statement of the account and can then sell the property like at a chattel mortgage sale. Dealers must comply with all the laws of the state, cities, towns, etc., to avail themselves of this lien law. Michigan 1915 Law.

MINNESOTA

Persons altering, repairing or bestowing labor on any article of personal property at the request of the owner or legal possessor have a lien for their just and reasonable charges. If they are not paid within 90 days, they may sell the property at auction on giving notice. They also have a lien for storage.

MISSISSIPPI

Garagemen have a lien for labor performed and materials furnished in repairing motor cars under Code of 1906, Section 3075, and may retain the property in their possession and sell it. This right is superior to that of a person who sells a car on a conditional bill of sale and retains the title. Decided in J. A. Broom & Sons vs. S. S. Dale & Sons, 67 Southern 659, March 15, 1915.

MISSOURI

There is a common law lien on chattels which have been improved by the labor of a mechanic if they are retained in his possession.

NEBRASKA

Any person who makes, alters or repairs, or in any way enhances the value of any vehicle . . . at the request of or with the consent of the owner, shall have a lien on such vehicle . . . while in his possession for a reasonable or agreed charge for the work done or materials furnished; and shall have the right to retain said property until said charges are paid. If possession of the property is parted with, the lien may be retained if a certificate is filed in the office of the clerk of the county where the work was done or the material was furnished, or the property was kept, together with a verified statement of the items of work, etc., and a description of the article repaired . . . within 60 days after the last item was performed. Chapter 39 Revised Statutes of Nebraska 1913, paragraphs 38-41, Section 19, entitled "Artisans' Liens."

NEW HAMPSHIRE

There is a common law lien when a person has lawful possession of personal property for any expenditure made by him or labor performed at the request of the owner.

NEW JERSEY

Garagemen, repairmen, etc., may detain vehicles in their possession against which they have charges for storage, repairs, gasoline, accessories, etc., until they are paid. The lien is not lost if motor cars are removed from their possession, and they may be seized wherever they may be found in any part of New Jersey.

Detained cars may be sold at public auction after 30 days if the sale is first advertised in a paper in the city or town where the garage or repairshop is located, and 5 days notice is set up in five of the most public places. Chapter 312 Laws of 1915, New Jersey, entitled "An Act for the Better Protection of Garage Keepers and Automobile Repairmen."

NEW MEXICO

Mechanics, artisans, etc., have liens on articles of personal property made or repaired by them for the amount due.

NEW YORK

Garage keepers have a lien on motor cars for storage, repairs, gasoline and other supplies furnished with the consent of the owner whether a conditional vendee or a mortgagor in possession, and may detain the property if in their possession until their charges are paid. Section 184 Lien Law, Consolidated Laws of New York.

NORTH CAROLINA

Mechanics, etc., have a lien on articles of personal property which they repair or alter. This lien must be filed within 12 months after the completion of the work. Six months additional are allowed to institute an action to enforce the lien.

NORTH DAKOTA

Mechanics have liens for the amount of their charges for labor performed upon articles of personal property.

OKLAHOMA

Blacksmiths, wheelwrights, horseshoers, etc., have liens for work done or articles repaired.

OREGON

Repairmen, machinists, mechanics, etc., who have extended labor or furnished materials have a lien for the amount of their charges.

PENNSYLVANIA

Mechanics have a common law right to a lien for labor performed by them. There is an act in this state entitled "For the Protection of Keepers of Garages or Automobile Shops" providing that every person who shall place in any garage or repairshop any automobile for storage, repairing or garage service, and shall surreptitiously remove the automobile or cause it to be removed by any false pretense or device with intent to defraud, shall be adjudged guilty of a misdemeanor and, upon conviction, shall be sentenced to a fine of not more than $100 or imprisonment in the county jail for a term not exceeding 3 months, either or both, at the discretion of the court.

PORTO RICO

No mechanics' lien law or lien for those furnishing labor or materials exists in Porto Rico.

RHODE ISLAND

Mechanics are entitled to liens upon articles for labor performed and expenses bestowed at the request of another.

SOUTH CAROLINA

Mechanics have liens upon articles of personal property when they have bestowed labor upon the same.

SOUTH DAKOTA

Mechanics have liens upon articles of personal property for labor performed on the same.

TENNESSEE

Garagemen, etc., have a common law lien on property repaired by them if they retain possession of it. Under Acts of 1909, Chapter 150, providing that there shall be a lien upon any vehicle . . . for any repairs or improvements made or fixtures or machinery furnished at the request of the owner or his agent, in favor of a mechanic, contractor, founder or machinist who undertakes the work. A mechanic has a lien for repairs for labor performed and materials furnished in repairing an automobile. Shaw vs. Webb, 174 S. W. 273, Supreme Court of Tennessee, March 6, 1915.

TEXAS

Although there is no special provision for a garageman's lien in this state, mechanics, artisans, etc., have a lien for any articles created in whole or in part by their services and for labor performed upon the same. Under Article 5665 R. S., 1911, there is a special provision for liens for work on vehicles. It has been held that though a garageman may avail himself of the lien given under these statutes, he loses the lien by giving up possession of the property. Malcom vs. Simms, 164 S. W. 924; Caldwell vs. Supply Company, 158 S. W. 1031; Ford vs. Freeman, 168 S. W. 80.

UTAH

Any person bestowing labor on personal property at the request of the owner has a lien for his labor and for materials furnished in connection therewith. In the case of Westminster vs. McCurtain, 118 R. C. 664, September 27, 1911, it was held that a garageman was included and had a lien for his services in repairing an automobile.

VERMONT

Every person who makes, alters or repairs an article of personal property at the request of the owner has a lien thereon for his reasonable charges and may retain possession of the same until such charges are paid, and further may, if such charges remain unpaid for 3 months, and the value of the property does not exceed $100, sell the same at public auction by posting notice in two or more places in the town of his residence for 10 days.

VIRGINIA

Mechanics have a lien for labor bestowed in improving personal property.

WASHINGTON

Persons extending labor, skill or materials on articles of personal property at the request of the owner have a lien upon such chattels for the contract price of their labor and materials or for the reasonable price of their services for a period of one year, providing that they file notice of their claim within 90 days from the date of delivering up the chattel and institute an action to foreclose their liens within 90 days after filing notice of lien. 1 R. & B. C., Sections 1154, 1157.

WEST VIRGINIA

Mechanics and artisans have liens for repairing personal property.

WISCONSIN

Every garageman . . . and every person keeping any . . . automobiles . . . shall have a lien upon and may retain possession of any such . . . automobiles . . . for the amount which may be due for the keeping . . . and care thereof until such amount is paid, provided, however, that no keeper of any garage . . . shall exercise the aforesaid lien upon any automobile unless there shall be posted in some conspicuous place a card stating the charges for storing the aforesaid automobile, the same to be easily read at a distance of 15 ft. by any person entering the aforesaid garage by entrances. Violation of the above is a misdemeanor, punishable by a fine of not less than $5 nor more than $25. Laws of 1915 Wisconsin. Lien comes prior to chattel mortgage (159 N. W. 138).

WYOMING

Mechanics have liens upon articles which they have improved by their labor.

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EDITORIAL OBSERVATION

Show Opportunities

THE New York show provides one of the greatest opportunities for out-of-town dealers to get close to factory officials.

Here is one of the biggest gatherings of factory men—sales managers, service managers, engineers, advertising men—of the years. Here are gathered the *best brains of the factories.*

And here is the biggest opportunity for the out-of-town dealer to get close to these factory men.

Bring those sales problems, those service problems, those repair and adjustment troubles to the show with you. Come prepared to get all this trouble out of your system before you leave the show and *to take away with you some real advice.*

If the dealer from Oskaloosa will *only tell* the sales manager from his factory all about that troublesome sales problem it will disappear like thin air. The sales manager's experience covers whole sections of the country; quite likely he has seen this self-same problem *solved a dozen times by other dealers.*

The same applies to mechanical matters.

The service manager and the engineer visit the shows to find out what their dealers and garagemen are up against. *These men above all others can be of real help in clearing away service troubles.*

By all means consult the factory men; talk with them; tell them your troubles; get their good advice; make them help you. In helping you to solve your problems they are also helping themselves.

And, remember: *These factory men are willing and anxious to help their dealers.*

Make the show a business gathering—not a mere social function.

Why the Sub?

IS there any good reason why the term "subdealer" should be permitted to linger in the trade? There isn't much character to it, and Motor World wonders just how the many reputable business men in America like to be called SUBS merely because they happen to have a car selling contract with some one other than the factory.

The man who deals in cars is a dealer. His contractural relations with the distributer may technically make him a subordinate, but is that any reason why he should be dubbed a SUB? Wouldn't it answer the purpose as well if the distributer were known as such and if those who buy cars from him were called DEALERS?

And if the dealer again distributes them he, in his contracts, would be a distributer and the smaller man a DEALER. Motor World would be pleased to print the opinions of the trade on this question.

A Chance for Economy

WITH prices of everything mounting it is worth while to consider economies, and one of the opportunities for cutting down expenses without being unreasonable is in the use of office stationery.

Many letters are only a half-page long. If you have many such it will be to your advantage to have some half-sheets made. If many of your letters run into two pages you may find merit in the plan used by a Detroit garageman who has his first sheet in a good quality of stock and his second sheet in a lighter grade.

Also, watch your waste paper. Maybe you're wasting more than is necessary. And above all things, bale your waste and sell it. Don't throw or give it away.

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Questions and Answers

"The House of Personal Service"

IN reply to your letter in which you ask for information regarding the "House of Personal Service," beg to say that we try to make our service a personal matter with each customer—we want him to feel that we take as much interest in the upkeep and appearance of his car as he does himself—and each member of the organization from the manager down is never too busy to advise with or assist a customer in any way, at any time, at any place. We try to instill into the mind of the customer the idea that he himself has an interest in the business—and without flattering ourselves we can truthfully say that a good many of our customers will go a long distance out of their way to do us a good turn.

We try to make each customer a salesman and to aid in this work we present a service coupon book to each customer who brings a prospect to whom we sell a car.

In selling a car we always advise the customer that, should he have a breakdown anywhere within the limits of this county, all he has to do is to phone us and we will send after him and tow him in if necessary absolutely free of charge, provided the fault was not his own, and we leave that decision to the customer himself. We have never had cause to doubt a customer yet in this respect, and we think the reason for it is because of the fact that we try to make him feel like he had a real interest in our business.

Every member of our organization is able to do first aid work on all of our cars and our manager never seems so happy as when he is helping a friend out of trouble—by crawling under.

Another evidence of this personal service is that whenever anything happens to a customer's car we take great pleasure in explaining to him in detail, if he wants us to, the cause for and the best method of repair or adjustment.

As soon as we build our new garage we shall make it a paramount rule never to employ a mechanic who has not had a real training in some good automobile factory. No amateurs will be employed—and while our rates for repair work will be higher than any of our competitors yet we are quite sure that the expense to the customer will be a good deal less; we have thought of this slogan for the repair department bill: "We charge you more, but it costs you less."—Chas. F. Hopkins, Jr., Florida Briscoe Distributing Co., St. Augustine, Fla.

Oil Stops Radiator Rust

Rust Causes Leakage —No Drawbacks

Editor Motor World: Under inquiry from San Jose, Cal., regarding treatment of radiator to prevent leaks, would advise thoroughly cleaning cooling system and filling with fresh water, then making an addition of two tablespoons full of lubricating oil.

I think you will find that this will prevent rust entirely, and therefore prevent leaks in the radiating system.—Reilly Motor Car Co., by R. P. Pennock, Los Angeles.

Editor Motor World: Yours of recent date at hand regarding the use of lubricating oils in the cooling system of motor cars for the prevention of oxidation. Wish to inform you that I have been using this same method for the past seven or eight years in the cooling system of various cars which I have been driving, and must say that I have never noticed any difference in the actual cooling of the motor after putting two tablespoons full of oil in the radiator. I have noticed no ill effect on the rubber radiator connections.

After using oil for about two weeks on an old car I have always drained and flushed out the cooling system. On refilling the radiator with clean water I then add the regular quota of oil, after which I have had no trouble with leaky radiators or rusty water.

If the application is made in new cars there will be less trouble from leaky radiators.—R. P. Pennock, Los Angeles.

Marathon Specifications and Where to Obtain Parts

Editor Motor World: Will you kindly give all information you possibly can in regard to a Marathon car about 1910-11 model, specifications as to motor, clutch, transmission and rear system? Also full details for wiring car for battery and magneto; I think this car has a Remy magneto, and was built in Nashville, Tenn. Do you know if parts can be purchased for same?—Peter Homolya, 2906a McNair, St. Louis, Mo.

We are sending you a wiring diagram of the Remy magneto for four-cylinder cars, and are certain that this will give you the information required.

The parts for your car may be purchased from the Marathon Service Co., Nashville, Tenn., or from the Puritan Machine Co., Detroit.

The following are the specifications of the models M and N Marathon of the years 1910 and 1911:

Cost, $1,500; hp., 28.9; cyl., 4; bore, 4¼; stroke, 4½; cyl. cast, pairs; tires, 34 x 3½, front and rear; rad., H'comb; pump, syphon; mag., Remy N. T. and battery ignition; lubrication, splash; clutch, mult. disk; trans., 3 speed, selective on motor; drive, shaft; wheelbase, 116; frame, pressed steel; crank, 3 bear. plain; trans., ball-bearing; axle, B. & R.; weight, 2250 lbs.

OVERHAULING FLANDERS 20

Editor Motor World: I have a Flanders 20 to overhaul, and the owner wants to put on demountable rims and the same size tires all around. Can you tell me where I can get such wheels, and if they can be put on the hubs in the present wheels? The owner is figuring on putting on an up-to-date carbureter, and I would like to find out what company is making a carbureter to fit this car without changing the control rods. How about the Schebler Model R? Can one be purchased to fit this car?—E. C. Marion, Stirling City, Cal.

In order to equip this car with demountable rims it would be necessary to put on new wheels all around. Possibly a set of Ford wheels will do, but we are not certain on this point. It is merely a matter of measuring.

There is no carbureter which will go on this motor without a little fitting, but in most cases only a slight change will be required. If a Schebler is put on, for example, it is just a question of slightly lengthening the control rod.

It is not advisable to go to all this expense with a car that is not worth more than $75. If your owner wants demountable rims and a Schebler carbureter, it would be much better for him to buy a used car with this equipment on it.

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The RETAIL NEWS.

COAST

The Kelly Springfield Motor Truck Co., Seattle, is now located in a new home on Eleventh Avenue, between Pike and Pine Streets.

Ballou & Wright, Seattle, have secured the distributing rights on the Racine tire for Oregon, Washington and Idaho.

The Saxon Sales and Service Co., Portland, Ore., has been incorporated by A. V. Beesley, F. T. Houk and Horace Walker, and distributing headquarters opened at 529 Washington Street.

The Lichtenberger-Ferguson Co., Los Angeles, is the new home of the Los Angeles Saddlery and Finding Co., which has added accessories and tires to its original business.

Spokane, Wash.—More than a dozen public garages representing an investment of approximately $100,000, have been built in Spokane during 1916. During the coming year there is every indication that an even greater investment will be seen in this class of properties.

D. H. Dwight completed a modern fireproof garage building, 100 x 143, at a cost of $16,000. On Jefferson Street, running through from First to Sprague Avenues, the Cowles Publishing Co. built three garages, 50 x 155 ft. Each has show rooms, stock rooms and small repairshops. They represent an aggregate cost of $34,000.

M. J. Phelan, Spokane, has completed a garage, 68 x 92, at a cost of $5,000, which is occupied by the Washington Garage Co.

Walter J. Nichols, Spokane, has had plans drawn for a garage building which, when completed, will represent an investment of $10,500, and will house the Independent Garage Co.

The Mitchell-Lewis & Staver Co., Spokane, has just completed at a cost of $5,000, a garage building, 40 x 100, which will be used exclusively for a salesroom for Mitchell cars.

The Seven-Seven Co., Spokane, Dodge representative, has enlarged its brick garage on First Avenue by one-quarter. H. J. Cone has put up a garage building, 50 x 100, at a cost of $8,000.

Elmer W. Hill, Seattle, Wash., for the past few years manager of the White Co., has changed his headquarters to San Francisco, to handle the Good Roads and Road Oiler business for the Pacific Coast territory for the White company. He will be succeeded in the Seattle branch by R. G. Hubner.

The Chandler-Dunlap Co., Seattle, Wash., Pennsylvania tire distributer, has enlarged its quarters, and frontage of 80 ft. has been obtained for display.

The Firestone Tire & Rubber Co., Los Angeles, last week removed its branch into a new three-story structure of solid concrete, having a frontage of 55 ft., a rear width of 75 ft., and a depth of 155 ft. This branch supplies Firestone products for California, south of San Luis Obispo County, Arizona and northern Mexico. The business transacted during the past fiscal year under the management of A. T. Smith passed the million-dollar mark for the first time in the company's history. The garage will house eighteen cars at one time and still allow ample room for the workmen.

Hawley, King & Co., Los Angeles, one of the oldest motor car distributers on the coast, has abandoned the retail business in both the National and the Oakland, and the H. C. McVey Co. has been organized to act as retail dealers in Los Angeles. Hawley, King & Co. distributes Oaklands in the entire State of California, most of Nevada and part of Arizona. It has handled the National in southern California only. H. C. McVey, who heads the new concern, in 1908 was a salesman with the Buick company in Indianapolis, and subsequently was promoted to sales manager. He went to Atlanta, Ga., as branch manager and territory superintendent for the Buick in 1912. He joined the Oakland forces in the following year, and was made territory manager at Minneapolis. He went to Los Angeles as sales manager for Hawley, King & Co. in 1914.

The Hartwell Motor Co., Los Angeles, is taking possession of a new building at 1224-26 South Flower street for its Jeffery business. F. M. Randell has been promoted from the city sales force to district salesman and these new agencies have been closed: Smith & Durkee, Santa Barbara; Jeffery Sales Agency, El Centro; W. W. Pope, Santa Paula. Good business is developing in trucks and Quads.

James C. Doyle, San Francisco, has opened an engineering office at 76 Eighth Street devoted to the designing and building of special commercial cars.

The San Francisco Tire Co., Inc., affiliated with a company operating a chain of 40 stores, has taken possession of the premises, 616-624 Van Ness Avenue, San Francisco. Albert M. Grossman is manager.

The Weaver-Ables-Wells Co., new Studebaker building in Oakland, has the largest salesroom in the city; 20,000 square feet of floor space are furnished in the one story.

R. R. Richardson, San Francisco, a well known safe manufacturer, has organized a corporation known as Richardson's Automobiles, Inc. The company will handle the King car and is located at the corner of Van Ness Avenue and Turk Street.

EAST

The Kesler-Tag Automobile Co., Brooklyn, N. Y., has removed to new quarters at Bedford Avenue and Eastern Parkway. The company, consisting of S. W. Kesler and Albert H. Tag, handles the Abbott-Detroit, accessories, tires and oils, and operates a service plant.

H. B. Rasch, for many years identified with the shipping industry of Baltimore, Md., has formed the Rasch Motors Co., and has established temporary headquarters at Beachdale Road, Roland Park.

H. W. Bowker, Baltimore, formerly of Hartford, Conn., has become manager of the Saxon distribution in the state for the Mar-Del Mobile Co., Saxon representative. Lyman Bryan, Bowker's predecessor, has joined the truck sales force of the Packard Motor Car Co., Baltimore.

F. G. Boker, Baltimore, has joined the sales force of Riordan Bros., distributers of United States motor trucks. Boker for about a year and a half was engaged in selling the Mack.

W. E. Leutbecker, Baltimore, who for several years has been in charge of sales for the Automobile Service Co., has become identified with the King Motor Sales Co., Inc. He has left for Detroit to study the construction of the King at the factory, and after three weeks will return and take charge of service.

A. F. Hann, Baltimore, has joined the sales force of the Oriole Motor Co.

The Motor Agency Co., Baltimore, will have the largest service station in the state devoted exclusively to Ford service when its new building at German and Green Streets is completed within the next ten days. Service for 100 cars at one time is the aim of the company.

The Boulevard Motor Supply Co., 2005 North Charles Street, Baltimore, has opened for business. It is owned and managed by Frank J. Rowe, a veteran of the accessory field.

The Sweeten Automobile Co. of Philadelphia has established a branch in Wilmington, Del., with temporary headquarters at Delaware Avenue and Adams Street. The company is handling the Franklin and Hupmobile.

The Acme Motor Sales Co., Hartford, Conn., Marmon distributer, is to take over the quarters now occupied by Russell P. Taber, Inc., at 334 Pearl Street, as soon as this concern is able to remove to the new sales and service building on lower Allyn Street.

George F. Wright, Hartford, Conn., formerly of the Overland Hartford Co., has joined the A. C. Hine Co., 314 Pearl Street, as manager of the wholesale department, handling the Oakland and Chalmers.

Peter C. Nelson, Hartford, Conn., of the sales force of this branch of the Packard Motor Car Co. of New York, went to New London Jan. 1 to manage a branch to be opened April 1.

J. C. Bartlett, Philadelphia, owner of the Bartlett Garages, has merged his interests with the Detroit Electric Car Co. of this city, and W. C. Anderson, of the Anderson Electric Car Co. of Detroit. Bartlett is now vice-president of the Detroit Electric branch here and Anderson is president. S. A. Tolman of New York is sales manager of the new concern.

The Traylor Motor Garage Co., Allentown, Pa., has purchased ground in Reading on which it will build a new $50,000 garage.

The Goodyear Tire and Rubber Co., Philadelphia, has leased a two-story concrete building at Broad and Huntingdon Streets, in course of erection.

The Hale Motor Co., Wayne, Pa., will build a one-story garage, 60 x 100 ft.

The Daniels Distributing Corp., Philadelphia, has been formed to handle the Daniels. The company is composed of G. R. Miller and E. B. Pendleton, and has located at 721 North Broad Street.

The Philadelphia branch of the Empire Tire and Rubber Co. has moved from Broad and Wood Streets to the new Empire Building, at 810 North Broad Street.

M. A. Magee, formerly assistant manager of the Philadelphia branch of the Firestone company, has left to take up new duties in the accessories division of the factory at Akron.

T. W. Simpson, formerly New England manager of the Grant Co., has been appointed director of sales for the T. S. Johnson Co., distributer for the Atlantic Coast states of the Monroe car, with offices in the Abbott Building, Philadelphia.

Cummings & Stilphen, Augusta, Me., have taken the Velie agency.

P. M. Lawrence, Augusta, Me., Hudson dealer, has just opened new quarters.

The Puritan Motor Sales Co., Portland, Me., has taken the Premier agency.

Harry Fosdick, Boston, will handle the Nelson in New Enginad.

The KisselKar Co. of Rhode Island, Providence, has been formed to handle that line, with Gilbert Williams, formerly of the Maxwell, in charge.

The Standard Tire and Rubber Co., Boston, gave its employees a cash present as a New Year's gift.

The Henley-Kimball Co., Boston, has opened a branch at Worcester for the Hudson. R. B. Jacobs is in charge.

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The Broadway Sales Co., Providence, R. I., Dodge dealer, has moved to new quarters.

E. L. Thompson, Boston, has entered the accessory business for himself, starting with Halladay specialties.

Frederick G. Chandler, Worcester, Mass., has taken the agency for the Peerless.

George W. Hunt, Hingham, Mass., has become manager of the Fort Hill Garage.

The Lower Falls Garage, Newton, Mass., is being enlarged.

Bent & White, Winchenden, Mass., have taken charge of the Toy Town Tavern Garage.

The Peerless New York branch has leased a site at 642-50 West Fifty-seventh Street, and will erect a service station; the site is 150 x 140.

Walter C. Gilbert, Derby, Conn., has added the Hupmobile. He has also the Chevrolet.

The A. W. Halle Motor Co., Buffalo, will occupy new quarters May 1 on the site of the Jewett residence on Main Street. The building will be of steel and concrete, will cost $50,000, and will have a service court of 10,000 sq. ft.

The Blue Ribbon Garage Co., Bridgeport, Conn., has let contracts for an addition 85 x 90, of brick and steel construction, three stories; cost, $50,000. It will add 22,000 ft. of floor to more than 100,000 ft. existing at present. Work will be finished March 1. The entire garage, now practically fireproof, will, nevertheless, be fitted with a sprinkler system for the safeguarding of contents.

E. E. Lombard, a former salesman for the Eagle Garage Co., Inc., Jamestown, N. Y., will open a garage about the last of March at Frewsburg, N. Y., and will handle the Ford; also repairing.

MIDDLE WEST

Ralph Mammen, Toluca, Ill., has retired from the railroad business, and will open a garage in Toluca Jan. 15. He will be distributer of the Ford, and also handle accessories.

The Washington Automobile Radiator Co., Chicago, has been incorporated at $1000 by J. A. Muldoon, J. C. McDonough and J. T. Ryan.

The Mattoon, Ill., Motor Car Co. has been incorporated at $20,000 to manufacture and deal in motor cars. Incorporators, F. A. Brooks, W. E. Lumpkin and John McNutt.

Shumway Bros., Taylorville, Ill., have have leased the garage and salesroom on West Market Street from Roy A. Johnson. The firm will distribute the Buick, and also handle supplies.

The Motor Car Supply House, Decatur, Ill., has moved into a new building.

The Toledo Velie Co., Toledo, has been succeeded by the Chambers Motor Sales Co., and has removed from 218 Huron Street to 1411-15 Jefferson Avenue. It handles the Elcar and Velie.

George W. Scherer, Francisco Village, Mich., has been made Dort dealer.

C. C. Dougherty, Three Rivers, Mich., Buick dealer, has arranged for salesrooms at the Flint Avenue Garage, where he and Dennis Hopkins, who handles the Oakland, will occupy sales and display rooms together.

The J. F. Hileman Garage, Mt. Pleasant, Mich., has been sold to John and William Bamber, and the business will be conducted under the name of Bamber Bros.

Alvah W. Brown, Grand Rapids, Mich., has been granted a permit for a three-story garage at 71-77 Sheldon Avenue S. E., in connection with the Hotel Browning.

Force & Billings, Lapeer, Mich., Buick and Maxwell dealers, and the garage of Gordon Starking have moved into the Schlegel Building.

W. D. Frakes, Hennessey, Okla., has purchased the South Main Street Garage. Accessories and supplies will be added.

Merton Haines, Lum, Mich., has taken the agency for the Reo.

Tryon & Phillips, Lapeer, Mich., have opened a Dodge agency, and will occupy quarters at the Lapeer City Garage.

The Central Michigan Oakland Co. and the Abbott-Detroit Sales Co., Bay City, Mich., held a public opening of their new showrooms and garage in the Fellowcraft Building, Sixth and Adams Streets, Dec. 28.

Day & Storr, Marshall, Mich., Chevrolet dealers, have leased the old post-office building and will open a showroom there.

Asire & Palmer, Marquette, Mich., dealers in the Overland, Willys-Knight, Cadillac and Jeffery, have obtained the three-story Fraternity Building on North Front Street, which will be remodeled and converted into a garage, salesroom and repair shop.

The Huron Motor Sales Co., Bay City., Mich., has been organized by William Hahn and Amos Jausi to handle the Chevrolet and Olds. They have leased both the Yauch and Noble garage buildings, using the latter for storage.

The Grand Rapids Double Tread Tire Co., Grand Rapids, Mich., has moved from 214 Division Avenue South, to 20 Fulton Street West. In addition to its regular double treading business, the concern will also distribute tires and accessories in western Michigan.

The Fielding Auto Sales Co., Toledo, Ohio, has been incorporated at $25,000, to deal in automobiles, by Odell D. Fielding, Mary S. Fielding, Joseph F. Fielding, Stanley G. Fielding and Charles Hartmann.

The Belmont Motor Car Co., Toledo, Ohio, has been incorporated at $125,000, to deal in automobiles, by A. T. Wilson, R. W. Beascher, Andrew A. Lehr, B. J. Gantz and A. H. Miller.

The Kenmore Motors Co., Bowling Green, Ohio., has been incorporated at $10,000, to deal in automobiles, by T. E. Moore, S. C. Palmer, D. I. Ladd, N. S. Reed and C. A. Stump.

The Youngstown Tire and Accessory Co., Youngstown, Ohio, has been incorporated at $20,000, to deal in tires and accessories, by B. F. Hollister, L. F. Pierce, J. D. Webber, F. S. Thompson and J. P. Eckenread.

The Hudson Stuyvesant Motor Co., Cleveland, Ohio, has increased its capital from $50,000 to $100,000.

Robert Laubenheimer, Richfield, Wis., has taken occupancy of his new garage and repairshop. The building is 60 x 76, of concrete construction. Alfred Maurer has been appointed manager.

The Badger Garage, Stevens Point, Wis., is now owned by J. V. Koehn and Charles Currier, who have purchased the third interest of P. W. Holte, who will continue to act as distributer of the Grant, Chevrolet and Oldsmobile, but relinquishes retail business to the Badger firm.

The Cusick Garage and Service Station, West Allis, Wis., has been designated as Maxwell dealer for this suburb of Milwaukee.

The Monitor Auto Co., Lancaster, Wis., is the new style adopted by the recently established motor car supply and accessory firm of Goldstein, Alt & Baille.

Lackus & Frank, Neosho, Wis., are erecting an addition to their public garage to provide more repairshop space.

Andrew Olson, Blue Mounds, Wis., has opened a motor car painting and trimming shop.

The Page Mercantile Co., Crandon, Wis., has been appointed dealer in Cadillac, Overland and Dodge cars for Forest County.

Arthur Zimdars, Cashton, Wis., has purchased the garage and motor car business of Soulin & Hill, LaFarge, Wis.

Fiege Bros., Bayfield, Wis., have completed their new garage and repairshop, and held the formal opening Jan. 2.

Frank King, Necedah, Wis., sustained a loss estimated at $3,500 by the total destruction of his garage and livery on Dec. 20.

H. Sherry, Neenah, Wis., will build a new garage and repairshop next spring.

NORTHWEST

Fred Millett, Tracy, Minn., bought the William Hedge Motor Inn.

Lindquist Bros., Porter, Minn., have bought the Miller & Shannon automobile business.

The Zimmerman-Bolster Motor Co., St. Paul, has been incorporated by F. A. Zimmerman, J. F. Bolster and C. F. Bolster at $20,000.

The Kuehne Wagon Co., Mankato, Minn., incident to taking the Jackson agency, will open a garage and repairshop.

Stenda & Larson, Maynard, Minn., have opened a repairshop.

The Drayton Motor Sales Co., Drayton, N. D., will build a garage 50 x 150.

A. G. Rosendahl, Kindred, N. D., will build a garage in the spring at Adams, N. D.

Boyd-Romans Auto Co., Aberdeen, S. D., will build an addition, 50 x 142, in the spring.

Anthony Borden, Litchfield, Minn., with H. G. Hanson and Victor Mickelson, has bought the Gust Chellin Garage.

W. P. Schulz, Lakefield, Minn., bought the Stone Garage and equipment.

Edward Bushnell, Castle Rock, S. D., has bought the Harmon Bros. Garage.

Hipple & Thompson, Wagner, S. D., have opened a garage.

William Erdman, Forbes, N. D., has rented the William Lentz garage and repairshop.

R. M. Gilbert, Warren, Minn., will build a garage, 50 x 140.

L. J. Albert, Deerwood, Minn., will remodel his garage.

G. M. Miller, Minneapolis, will build a garage at 313-319 East Lake Street, to cost $10,000.

The Auto Garage, Proctor, Minn., has been incorporated at $25,000 by W. W. Westfall, S. P. Jones and L. D. Skyhawk. Z. C. Hinckley of Biwabik will have charge of the garage.

W. L. Seeley, Wolsey, S. D., bought the garage interest of J. P. Anderson.

Otto Erickson, Donaldson, Minn., has bought the O. J. Tvede garage.

F. N. Johnson, Lancaster, Minn., has opened a repairshop for tires.

Lindquist Bros., Porter, Minn., have bought the Miller & Shennum automobile business.

The Motor Sales Co., Kalispell, Mont., has been incorporated by J. R. Thompson, John Sherman, C. W. Sherman and G. A. Thompson.

C. P. Peterson and I. E. Hand, Belfield, N. D., have taken over the Red Trail Garage.

Pitcher & Sommers, Twin Bridges, Mont., are building a garage.

R. A. Miles, Fairview, S. D., is building a garage.

Peter Stoesz, Delft, Minn., r.d. Windom, will erect a large garage in the spring.

Morris and Idris Jones, Lake Crystal, Minn., have completed a new garage.

H. A. and A. E. Castor, Waseca, Minn., are building a $10,000 garage.

Cordes Bros., Henning, Minn., leased their garage to C. E. Simpson & Son, Minneapolis, to take effect March 1.

George and Hal Hanson, Fairfield, Mont., have bought a garage. Hal Hanson will be manager.

Oscar L. Martinson, Minneapolis, who retired as superintendent of police Jan. 1, has associated himself with the Hess-Thompson Motor Car Co., a new firm handling the Chandler. Martinson, before becoming chief, was a successful detective in the motor car theft division of the department.

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I. N. Davis, Cobden, Minn., has moved into a new garage.

W. C. Brown, Duluth, has been made general manager for the Twin City Four Wheel Drive Co., University Avenue and Pelham Street, St. Paul, succeeding Charles Turner. He has taken an interest in the company.

B. F. Stimson, Minneapolis, manager of the Chevrolet Motor Co. of Minnesota, is building a brick Chevrolet service station at 9 East Sixteenth Street, to cost $20,000. It will be two stories.

Stacy Bros. & Merrill Co., Minneapolis, is building a brick public garage to cost $15,000 at 715 First Avenue N. It will be one story.

C. L. Morey, Minneapolis, is building a brick service garage at 602 Twentieth Avenue N. It will cost $15,000, and will be one story.

Gus Pubans, Ada, Minn., will open a garage and repairshop in part of the Ada Implement and Mfg. Co. building.

Arthur Mattson, New York Mills, Minn., has bought the Stinar Bros. garage.

Peter Fournelle, White Bear, Minn., has opened a new garage, 45 x 90.

The Stice-Hansen Motor Co., Williston, N. D., has been incorporated at $50,000 by L. N. Stice, H. C. Hansen and G. A. Stice.

W. P. Cooper, La Moure, N. D., has leased the Benjamin Garage, and will open a repairshop.

The Wilber & Sturr Motor Co., Minneapolis, has been incorporated at $10,000 by F. L. Sturr, Charles and Bernice Wilber.

The Seal-Tite Piston Ring Co., Minneapolis, has been incorporated at $100,000 by C. E. Larson, A. A. and C. A. Fosston.

R. V. Hess and E. C. Thompson, Minneapolis, as the new Hess-Thompson Motor Co., 36 Tenth Street S., have joined to distribute the Chandler in the Northwest.

SOUTH

D. W. Young, Detroit, has been appointed distributer of the Packard in Birmingham, Ala., and has opened display rooms at 2308 First Avenue, where a service department is maintained. Young has been Southern representative of the Packard Motor Car Co., and before that was Packard distributer in Houston, Tex.

G. M. LaHue of Atlanta, Ga., a Dort salesman, has joined the Pierce Motor Car Co. at Birmingham, Ala.

H. H. French & Son., Calera, Ala., will sell the Chevrolet.

The Fairchild Motor Car Co., Inc., New Orleans, has been made an Oldsmobile distributer.

SOUTHWEST

W. E. Brown, Waco, Tex., has formed the Brown Automobile Co., with F. E. McLarty, cashier of the Central Texas Exchange National Bank. The company will have a building 48 x 165, and will secure car agencies.

The Texas Motor Car Co., Port Arthur, Tex., has been formed with E. R. Lindsay as manager. He formerly was with the Neches Motor Car Co and Caffall Carriage Co.

The Central Motor Tire Co., Kansas City, has been organized to distribute Quaker tires, and has opened a salesroom at 1716 Grand Avenue. J. L. Cohen, manager, has appointed sixty agencies in Kansas and Missouri.

The Southwestern Auto and Supply Co., Springfield, Mo., has purchased a site at 428 St. Louis Street, across the street from its present location, and will erect a brick building. The company handles the Ford.

The D. C. L. Tire Service Co., Kansas City, has been organized with a capital of $5,000, to deal in cars and supplies. The officers and directors are: Frederick C. D. Dobson, Kansas City; Auguste Chouteau and Burwell O. Leftwich, St. Louis.

The Little Rock Motor Car Co., Little Rock, Ark., has been incorporated at $10,000 by F. N. Fisher and D. M. and E. B. Armstrong.

The Norton Motor Co., Norton, Kan., consisting of Loper, Fordice and Bunker, have bought the garage business of R. L. Kent; Morgan Renoe is manager.

The Elgin Motor Car Sales Co. has opened a salesroom at 1821-23 McGee Street, Kansas City, under a five-year lease, and will distribute the Elgin in Missouri and Kansas. The officers are: J. E. Crawford, president; E. J. Tranin, vice-president, and J. F. A. Casey, secretary-treasurer.

The A. B. D. Motor Co., Kansas City, handling the Chandler, will increase its sales force from five to eight after Jan. 1. Manager K. L. Day states that the company sold 700 cars during 1916.

The Southwestern Motor Co., Kansas City, which distributes the Reo and Grant, will increase its force 50 per cent this month.

Manning & Martin, Kansas City, have opened a salesroom at 1924 Grand Avenue, and will sell the Stephens.

F. R. Jones, Arcadia, Kan., has bought part of Edgar Nipple's equipment for his new garage, Nipple closing his garage.

Ellsberry & Yingling Bros. Auto Co., El Dorado, Kan., has incorporated at $10,000. The shareholders are: T. B. Ellsberry, E. V. Yingling, J. B. Yingling.

Eugene Herard, Elgin, Kan., is enlarging his garage.

The Central Garage, Oswego, Kan., Samuel Carpenter, proprietor, is rebuilding, and will open under the management of John Brady.

The Oswego Light, Power and Supply Co., Oswego, Kan., has completed an addition to its garage and repairshop; Nelle Nafus is manager.

Vernon & Sons, St. Francis, Kan., are planning a garage; they are Maxwell dealers in Oberlin.

The Dove Garage, Soldier, Kan., is nearing completion.

John Harper, Wellington, Kan., has purchased the Ash Garage from William Hazenhyer, and will remodel it, adding a second story. The building was formerly a town meeting hall.

James McCann, Woodruff, Kan., is planning to open a garage.

William Brunker, 232 S. Water Street, Wichita, Kan., has opened a garage and machine shop.

C. W. Brown, Wichita, Kan., has bought for $35,000 a lot at 137 North Lawrence Street, where he will erect a modern two-story garage with elevators.

Evens & Scudder, Larned, Kan., have purchased the repair department of the Chalmers Garage from W. S. Young.

W. A. Yeager has moved his headquarters to Wichita, Kan., from Hutchinson, for distributing the Inter-State and Davis in an enlarged territory.

The Carthage Auto Co., Carthage, Mo., now owns the Buick agency and garage, William Preston purchasing the interest of L. L. Simmons, W. J. Woods remaining as partner.

The Berkshire-Walters Motor Co., Caruthersville, Mo., has been incorporated at $6,000 by Chas. E. Berkshire, Edgar T. Walters, Frank C. Wilks.

The Kansas City Auto Parts Co., Boonville, Mo., is opening its branch in the Stephens Garage. Alexander Stephens, Jr., will be manager.

The McArthur Brothers Mercantile Co., Phoenix, Ariz., has been incorporated at $100,000, to deal in motor-driven vehicles and machines of all sorts, including automobiles, trucks, aeroplanes and all kinds of aircraft. Chas. H. McArthur and Warren McArthur, Jr., are the incorporators.

Frank Johnson, Empire Prairie, Mo., is building a garage and blacksmith shop.

N. E. Hinton & Sons, Moberly, Mo., have bought the T. J. Williams Garage, 129 West Rollins Street.

Harry Williams, Ingalls, Okla., has opened a garage.

D. F. Oyer, Marion, Kan., has bought the tire shop recently established by J. Schmidt.

Kansas City—Work has begun on the excavation for the new assembling plant which the Maxwell company is erecting at St. Johns Avenue and Belmont Street. The building will be of reinforced concrete, with brick facing, and 100 x 300.

The Motor Transit Co., Phoenix, Ariz., has been incorporated at $25,000, to carry freight and passengers for hire by means of automobiles. H. M. Gallagher, M. E. Cassidy and J. A. Hobbs are the incorporators.

The Central Service Co., St. Louis, has opened a passenger bus service from Fourth Street and Washington Avenue to Kings Highway and Washington Boulevard, a half-hour trip. A 16-passenger machine, built on the pay-as-you enter plan, is used. It is a Studebaker with pneumatic tires. It is a half-hour trip, and a five-minute service is planned.

J. Marshall Ball, St. Louis, recently with the Locust Motor Sales Co., has joined the Tate-Gilham Motor Co.

CANADA

The Dominion Car Co., Winnipeg, Man., has appointed R. D. Roach service manager. Roach has been service manager of the Winnipeg branch of the Ford Motor Co for the last seven years.

Fred W. Evans, Toronto, Ont., has been appointed manager of the Toronto branch of the Canadian Fairbanks-Morse Co., Ltd. Evans, who has been acting manager for the past year, succeeds the late Captain Frank R. Newman, who died recently from wounds received at the front.

Wm. A. Oliphant, Victoria, B. C., Vancouver and View Streets, has been appointed island distributer for the Briscoe.

The Universal Car Co., Ltd., Vancouver, B. C., is now handling the Grant.

W. H. Smith, Vancouver, B. C., who has been connected with the Ford company both in Vancouver and Seattle, is now a partner in the Auto and Radiator Lamp Co.

The Vancouver Tire and Repair Co., Vancouver, B. C., has been taken over by Bothamley Bros.

The City Vulcanizing Co., Vancouver, B. C., has opened at 435 Howe Street.

W. O. Webster, Vancouver, B. C., has been appointed British Columbia distributer of the Dort.

Moore & Reynolds, 1112 Seymour Street, Vancouver, B. C., have taken the agency for British Columbia for the Velie.

A. Gadbois, Montreal, late of Legarre Gadbois, Ltd., has started business on his own account, with a salesroom on Phillips Square, and has the Maxwell and Chalmers agencies.

The Gibbons Motor Car Co., Ltd., Toronto, has been incorporated at $1,000,000.

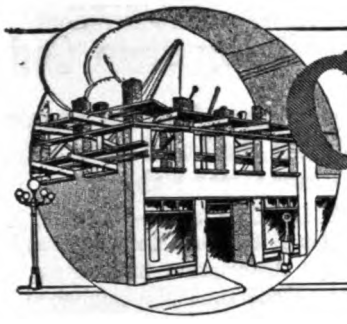
The Redcliff Motors, Ltd., Redcliff, Alta., has sold out to the Canadian Foundry Machine Co., Ltd., of the same place.

The Breen Motor Co., Ltd., Winnipeg, Man., has been made distributer of the Saxon.

The Grant Distributing Co. of Canada, Ltd., Montreal, has taken possession of the new garage and showrooms, 1 Park Avenue, where it has 42,000 sq. ft., and room for 200 cars.

The Cadillac Motor Sales Co., Winnipeg, Man., has sold and delivered more Dodge cars since Dec. 1 than the entire sales and deliveries during the months of November, December, January and February of 1915.

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Scientific Construction
GARAGES REPAIRSHOPS SHOWROOMS

By Harold F. Blanchard

Garage Entrance at Side Gives More Light in Showroom

Accessories Sold in Alcove off Showroom

Editor Motor World: I would like to have your advice in regard to the building of a garage as per enclosed sketch. Plot of ground 50 x 150 ft. long in center of block. Building to be 50 ft. wide by about 80 ft. long. Repair shop to be attached to rear later on.

The garage is to be constructed of fireproof materials, reinforced concrete, with 4-in. projections running along down inside the walls to support I-beams which are to be placed on these projections; on the I-beams is to be placed the metal roofing.

This is my own idea of a roof, and so I do not know whether it would work out in practice or not.

The front of the roof is to be 18 ft. high and the back about 12 ft. high. The ceiling of the showroom and store could be made level by hanging metal lath to the I-beams and then plastering. The ceiling of the storage room could be fixed in the same way only that it would not be necessary to have it level. There are to be no windows on the west side of the garage; those on the east side would be placed near the ceiling. Are the various rooms correctly mapped out? If not, what would be the best plans?—Lauren Wirkus, Prop. Auto Repair Shop, Minto, N. D.

Your floor plan is very good. The only change we would make is in the driveway, which need not be more than 10 ft. wide. The single entrance into the showroom and the connection between the showroom and the accessory store is a very good idea.

We do not see the advantage of the wall construction you have designed for supporting the roof. We do not doubt that it is practical, but think it is much better to build the roof beams right into the wall. Your local builder can supply you with a satisfactory design. The slope of the roof and the ceiling construction are O.K. If we can give you any further information we shall do so.

STANDARD GARAGE 50 FT. WIDE

Editor Motor World: How much space is it customary to allow per car for active storage? In planning floor space, has there been determined the best spacing of supporting columns, and has there been determined the best widths for garages, or would a 50-ft. width work out to better advantage than a 70-ft.

In New York City what is the customary weekly or monthly storage charge in a large garage in the business section where the garage is several stories in height?

If you have the above information at hand for distribution, we would appreciate receiving same, as we have had, on several occasions, to figure on garage propositions connected with our real estate business.—Chas. L. Brennan, Kay & Co., Detroit.

Broadly speaking, from 140 to 175 ft. per car is required in planning floor space, but this is governed by conditions.

Your columns should be placed 15 ft. apart center to center. Suppose, for example, your garage is 50 ft. wide, it is desirable to place the two rows of columns as near the side walls as possible, say 15 ft. or even 10 or 12 ft. would be better. This gives a wider aisle space and enables the cars to be maneuvered.

If you are planning to place one row of cars each side of a central aisle, the width depends on the average size of the cars to be stored. In some garages, where 90 per cent of the cars are Fords, a width of 40 ft. may be used, while for medium-sized cars 45 ft. is the minimum. For cars of all sizes, 50 ft. is satisfactory, although it is possible to store cars of this size in a 45-ft. garage by putting the longest car across the aisle from the shortest one and so on.

A 65 or 70-ft. garage is not advisable unless you plan to store two rows of cars on one side of the aisle and one row on the other.

Thirty dollars to $40 per month is the monthly storage charge in a large garage in the better sections of New York. Thirty dollars is for a medium-sized car, $35 might be for a small limousine and $40 for a large one with a lot of metal and glass parts to clean. This charge includes all washing and polishing as well as storage.

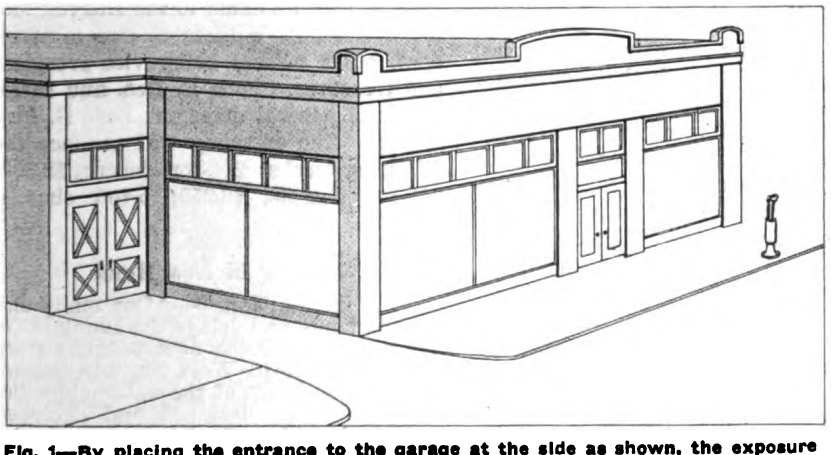


Fig. 1—By placing the entrance to the garage at the side as shown, the exposure of the showroom is almost as good as if the plot were a corner one

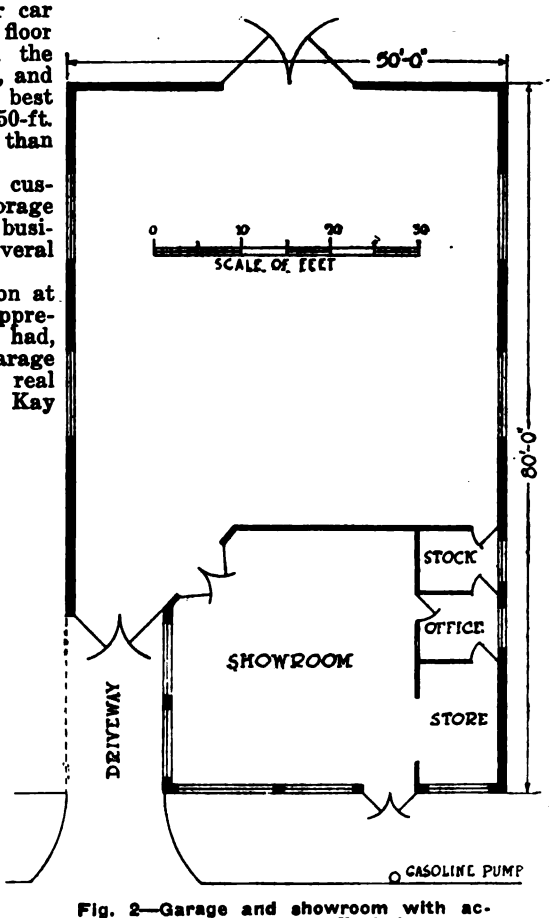


Fig. 2—Garage and showroom with accessory store in alcove off of showroom

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University Has Course for the Retail Dealer

Illinois School to Conduct Free Four-Day Instructive Series for Business Men

URBANA, ILL., Jan. 8—A Retail Merchants' Short Course will be given at the University of Illinois from Jan. 30 to Feb. 2, inclusive, under the direction of the College of Commerce and Business Administration. Such a course was first offered in 1915 and was repeated in 1916.

As previously given the course was rather general in character and intended for business men in many different lines. This year the plan is to specialize on the problems of retail merchandising and to make the course in fact a Retail Merchants' Short Course. It is estimated that about 75 per cent of those who attended the short course last year were connected in some capacity with retail establishments. There were frequent expressions of regret that the course did not include more lectures dealing with questions of retail trade. It is believed, therefore, that a more intensive and special treatment of the problems of retailing is justified.

In all twenty-four lectures and addresses, with time for open discussions, are to be given in morning, afternoon and evening sessions for the 4 days from Tuesday, Jan. 30, to Friday, Feb. 2. The lectures will be given by members of the faculty of the College of Commerce of the university, assisted by a number of successful business men and experts on the problems of retail merchandising.

Some of the subjects to be treated in the course are: Legal safeguards in buying and selling, application of workmen's compensation laws to retailing, government regulation of retail business, methods of figuring profits, perpetual inventories and other records, retail advertising, the training of salespeople, credits and collections in retail trade, problems of retail buying, and the cost of doing business.

Among the business men who will contribute to the course is E. B. Moon, Chicago, a successful retail merchant, and now the director of the Community Development and Trade Betterment Department of the *Farmers' Review*. Moon will talk on some of the problems of present retail merchandising, such as changing conditions and trade possibilities, the chain-store problem, mail-order competition, and the use of mailing lists.

James W. Fisk, manager of the Retail Service and Business System Department of the Associated Advertising Clubs of the World, who is a student of business questions and has had a wide business experience, will give two lectures on the value of training salesmen and the cost of doing business. Clifton C. Field, of the Kepler Dry Goods Co., Eau Claire, Wis., will present three lectures on the problems of retail buying.

One of the evening sessions will be devoted to a community program with special reference to the services and contributions of the retail merchant to community life. A second evening session will be devoted to addresses on the dependence of business on science by representatives of some of the technical departments of the university.

The short course will be open to all people in business. There are no scholastic or other requirements for admission and no fees will be charged for attendance.

Lauser Likes "Better Mechanics"

Editor Motor World: Just a word about your new department, "Better Mechanics." I am highly interested in this department, and think that you have hit the nail squarely on the head with this new department in Motor World. Motor World, to my way of thinking, is the best automobile journal published to-day, and this new department makes it better than ever. Keep this department going and we will have less botched jobs and better mechanics in the very near future if they WILL ONLY READ AND HEED YOUR ADVICE.—H. F. Lauser, Wellman, Iowa.

Electric Supplies Exclusively

KANSAS CITY, MO., Jan. 5—Within 90 days Kansas City will have its first building devoted exclusively to supplying electric automobile accessories when the E. S. Cowie Electric Co. will open a new mechanical department in a two-story building. The building will have a 50-ft. frontage by 110 ft. in depth and will be ready for occupancy April 1. The present location of the company at 1413 Grand Avenue will be maintained as the jobbing and local sales department while the extensive mechanical operations will be conducted in the new quarters.

McLean County Dealers Organize

BLOOMINGTON, ILL., Jan. 5—The McLean County Automobile Trade Association sprang into being at a meeting of all the dealers in cars, accessories, parts, etc., together with the proprietors of garages, repairshops, and vulcanizing plants, held in Bloomington. Officers were elected as follows: President, J. E. Lockwood; vice-president, F. H. Cole; secretary, E. E. Pierson; treasurer, J. O. Clark; directors, C. U. Williams, J. E. Simpson, F. H. Cole, J. E. Lockwood, and J. O. Clark. Meetings will be held twice a month and following a dinner to be held at uptown hotel. At these meetings, there will be a discussion of subjects of general interest. One of the first to be taken up will apply to a clearing house for used cars.

Des Moines Is Using the Reilly Show Code

Rearranges Motor World's Suggestions to Fit the Local Case and Plans Great Exhibit

DES MOINES, Jan. 8—Secretary C. G. Van Vliet of the Des Moines Automobile Dealers' Association has taken the Reilly Show Code that was published in Motor World, has rearranged certain details to make it fit the Des Moines show and exhibitors, and is distributing it among the dealers as a plan for show work.

This code pertains to the arrangement and decoration of exhibits, the handling of sales work, the distribution of literature and all the other details connected with putting on an exhibit. The Des Moines show was favorably criticised on the whole in MOTOR WORLD last winter, although several chances for improvement were pointed out. This year the dealers plan to make their exhibit one of the best of the year—and if possible the best.

Show During Inauguration Week

WASHINGTON, D. C., Jan. 8—March 3 to 10, inclusive, has been named as the date for the first automobile show to be held in Washington in three years. It will be known as the National Automobile Show, and held under the auspices of the Middle Atlantic Motor Association, Inc., which has in the past promoted various automobile events in this city. During this time, Inauguration Week, it is expected that there will be in the neighborhood of 300,000 visitors in the city to witness the ceremonies in connection with President Wilson's second taking oath of office. The Union Building, where the exhibition is to be held, has over 40,000 sq. ft. of floor.

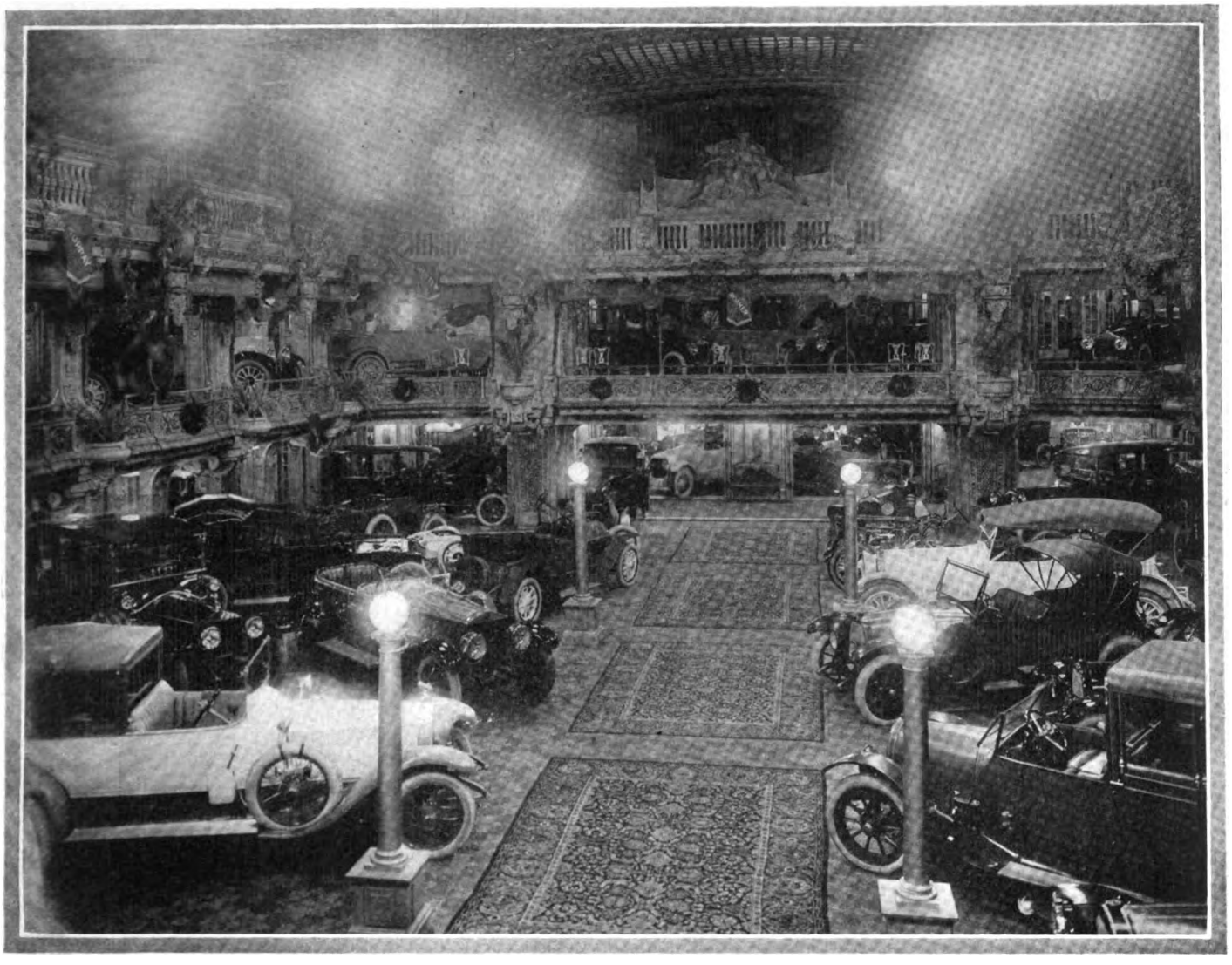
Harvey Truck Is Reincorporated

HARVEY, ILL., Jan. 6—The Harvey Motor Truck Works has been reincorporated with a capital of $300,000 and has changed its name to the Harvey Motor Truck Co. William E. Dee is president, other officers being vice-president and treasurer, Simon R. Dee, and secretary and general manager, Bert B. Fornaciari. The company will produce the following trucks: 2½-ton chassis, $2,500; 3½-ton chassis, $3,250; 5-ton chassis, $4,000.

Laidlaw in New Home

NEW YORK, Jan. 8—After many disappointments and delays the Laidlaw Co. has taken possession of a new six-story building at 16-18 West Sixtieth Street, right in the heart of the automobile district. It is so designed and equipped that the handling of business may be facilitated and expedited.

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Staged in an atmosphere and in surroundings of quiet and luxury, the Astor Salon is exclusive. Here are shown the latest and best designs of nationally known body builders and car makers of international repute

Setting Motor Car Fashions

Custom Styles in Bodies Set the Pace for Stock Production

What The Annual Astor Salon Holds

CUSTOM body styles from such masters of the body-building profession as Rubay, Holbrook, Healey, Locke, Brewster and others set the fashions just as Worth and Paquin and Callot set the fashions in women's wear. It is custom finish and custom design for which the factory with big production strives, and it is to custom design and finish that these factories must look for inspiration.

It is for this reason that the annual motor car Salon held at the Hotel Astor is of such importance to dealers all over the country. It is of even greater importance this year because of the great and growing demand upon dealers for special bodies—a business which already has been brought to large proportions by a number of New York dealers, and which surely is spreading its influence.

Unobtrusiveness the Motif

To those who study the changing styles in bodies it must be apparent that stock designs follow closely the custom designs which make their appearance at the Salon. As an example in point, there is the double cowl which first appeared from the workshop of a famous body designer; the slanting windshield; the divided front seat. A short time ago these were undeniably marks of the custom job; now the public demands them on even the lowest-priced models.

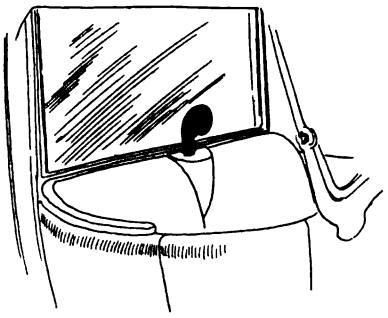
These features still are found in the custom jobs at the Salon; but designers appear to have taken another tack in their endeavor to obtain exclusiveness and that almost indefinable custom atmosphere which is so essential.

This year unobtrusiveness is the motif. Colors are far more somber; still greater attention is being given to detail; even the minutest roughness is now smoothed away; in place of brightly varnished surfaces there is now the rubbed, or satin, finish; windshields are losing the usual binding at the top; tops now have full lining and are far more carefully fitted; fenders hug the wheels more closely; moldings, where they are used,

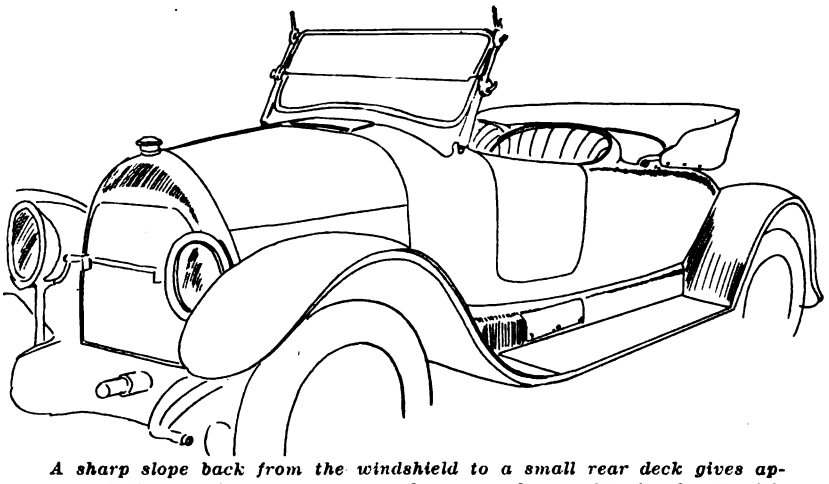
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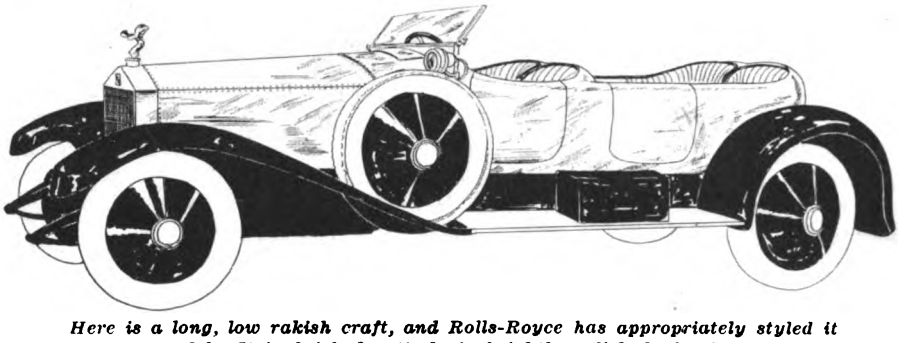
ODY STYLES AT ASTOR SALON



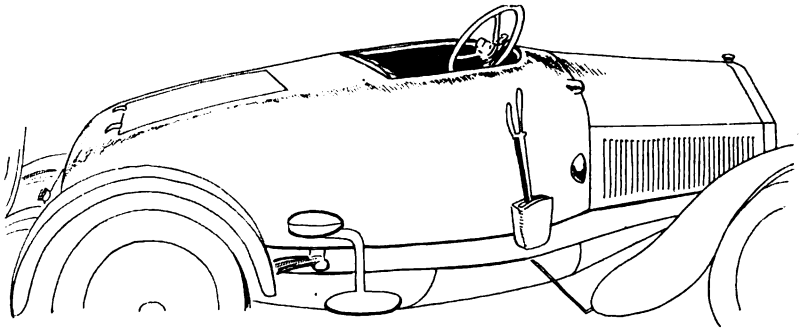
A position between the front seats is becoming popular for the Chauphone; this shows the installation on the Murray



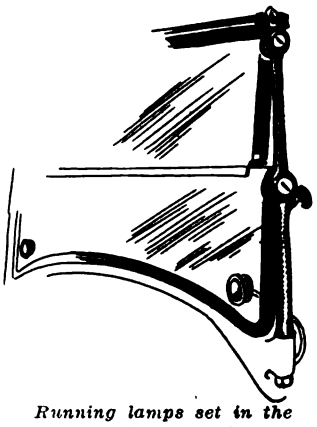
A sharp slope back from the windshield to a small rear deck gives approved lines and suggests a speedy motor boat; this is the Daniels roadster, which is finished entirely in white



Here is a long, low rakish craft, and Rolls-Royce has appropriately styled it a canoe model. It is finished entirely in brightly polished aluminum; a feature is the disk covering of the wheels



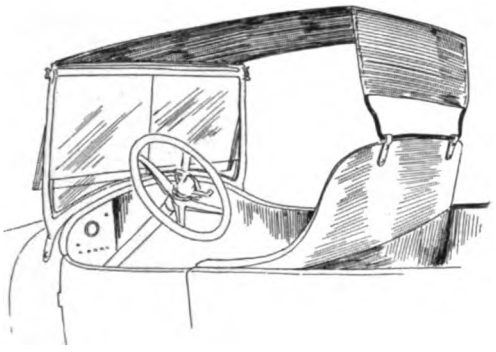
This Lancia roadster is styled a Hydroplane type and takes its name from the clean, slanting rear deck and the unusual lines; even the runningboards are gone



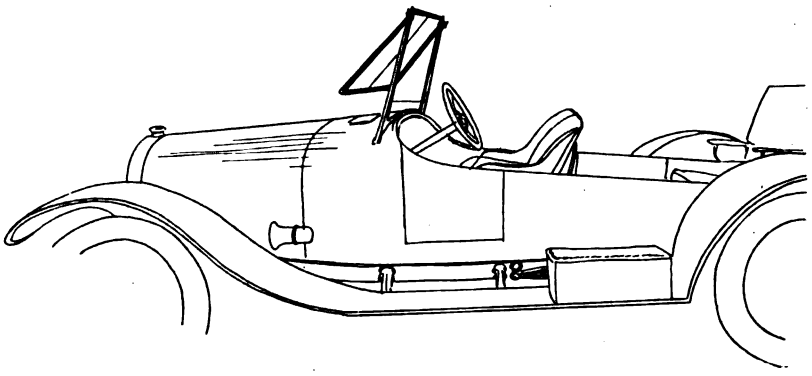
Running lamps set in the windshield are a feature of a Locomobile sporting cabriolet

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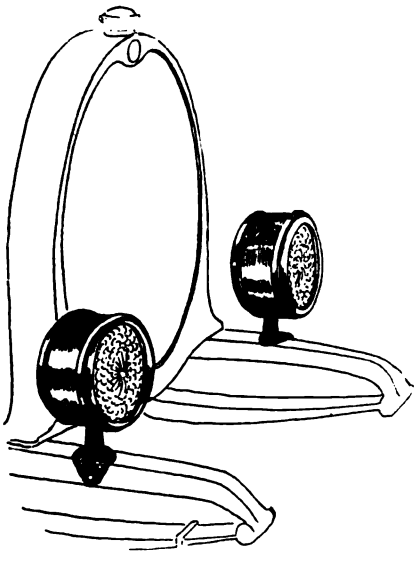
THAT SET MOTOR FASHIONS



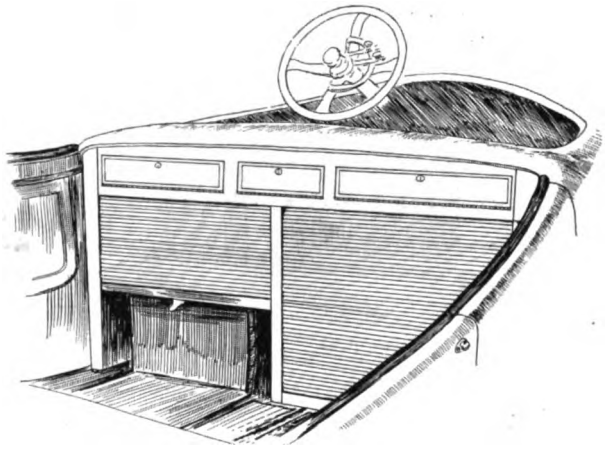
The top on this Brewster club roadster swings down out of sight behind the seat and is quickly adjusted and simple



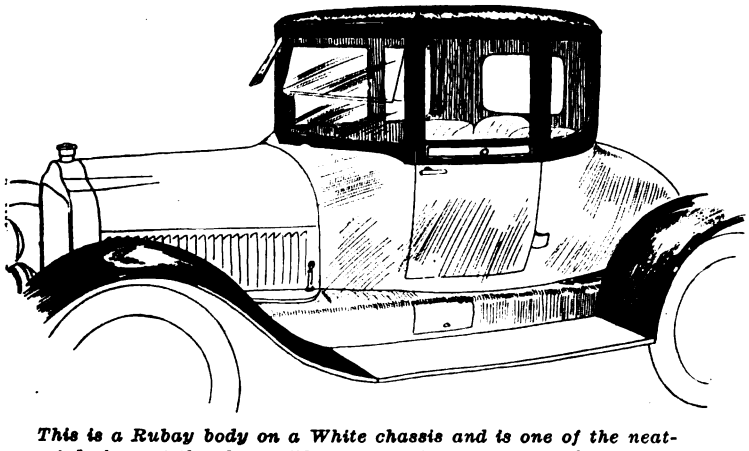
This is the Brewster club roadster which has the clever folding top shown at the left. The car is upholstered in rich vermilion broadcloth and is altogether a luxury vehicle



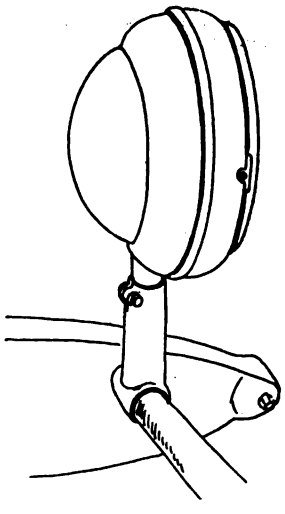
The Phianna lamps and radiator are odd in shape and give an air of distinction



Auxiliary seats are hidden by rolling doors in one of the big Singer models



This is a Rubay body on a White chassis and is one of the neatest designs at the show. The car is finished in beaver brown and black and upholstered in beaver brown tapestry

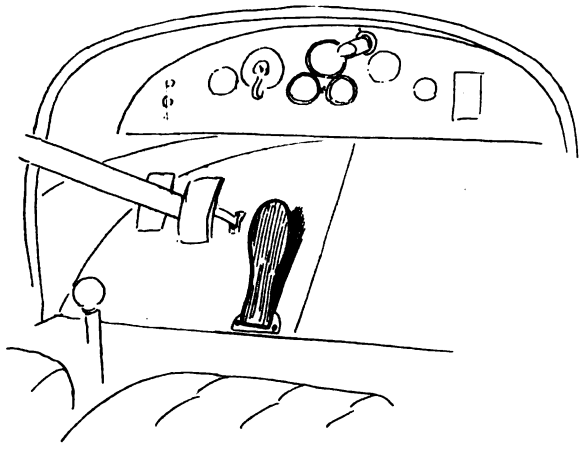


Lamps on the White are almost severely simple and are not braced to the fenders

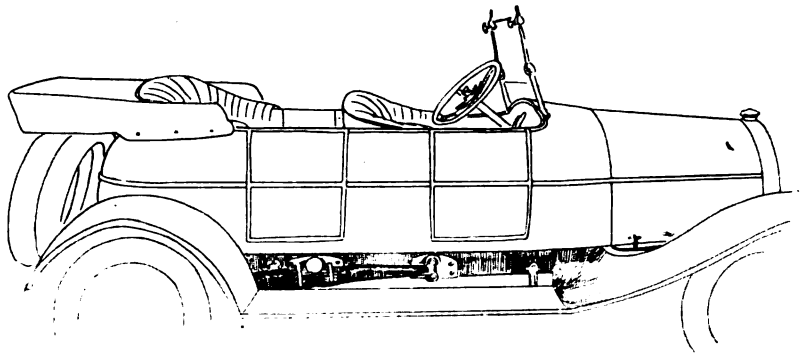
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WHAT MASTER BODY

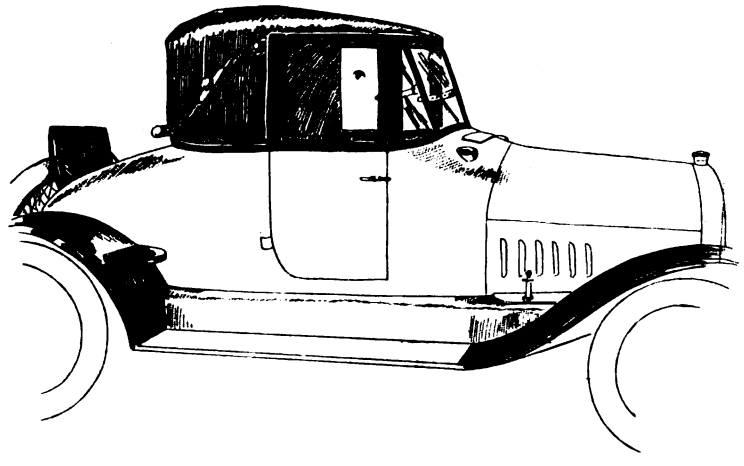
Some Details of



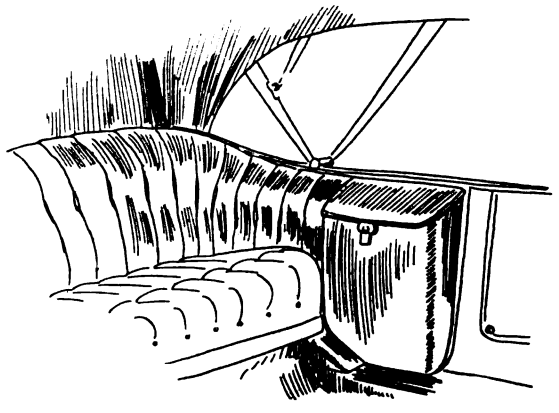
Here is a comfort feature. On some of the Locomobiles the accelerator looks like the sole of a shoe. Of course, this makes it easy for the driver



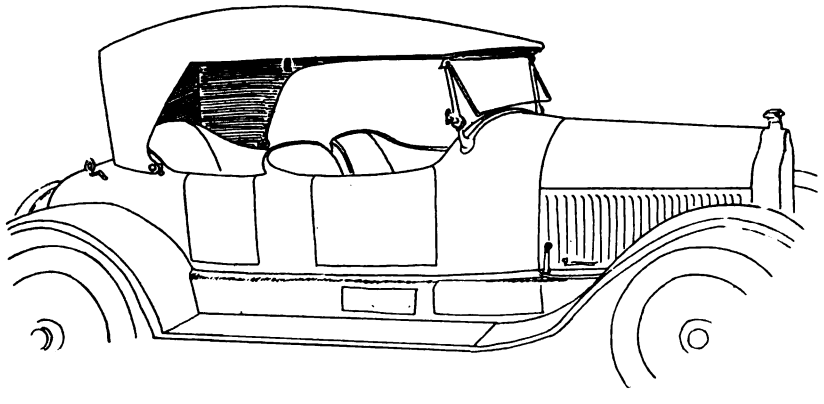
One of the Phianna bodies has a belt of molding running right around the body. The finish is dark green above the belt and black below it, both being the new satin effect and very pleasing



The Daniels cabriolet has an unusual slanting front and there is an auxiliary seat at the back. It is finished in dark green and cloth upholstered



In the Roamer there is a commodious compartment in the tonneau on each side, but it does not interfere with leg room. It is slightly exaggerated in the drawing and does not stand out quite so far, being practically flush with the upholstery

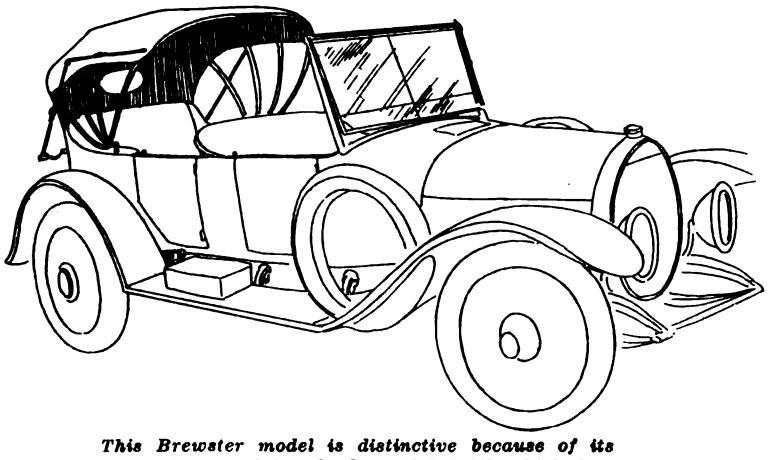


This White four-passenger roadster has a Rubay body, which represents the latest in design. Note the smooth lines and the well blended exterior. Upholstery is smooth and the finish is in two-tone satin gray

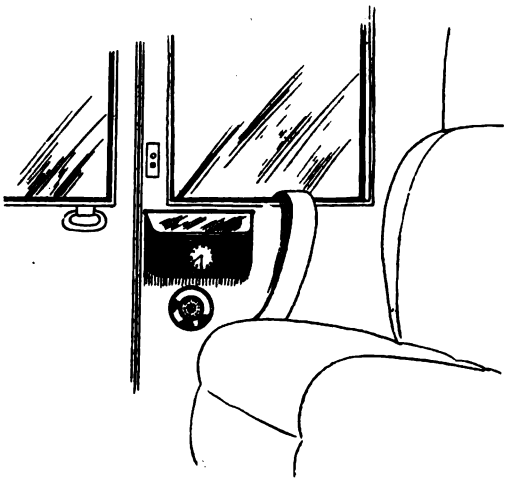
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BUILDERS ARE DOING

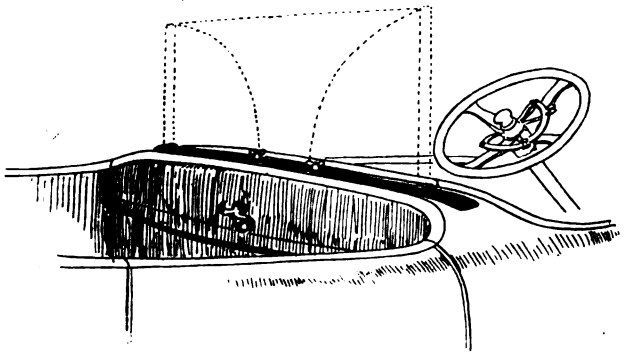
The Astor Salon



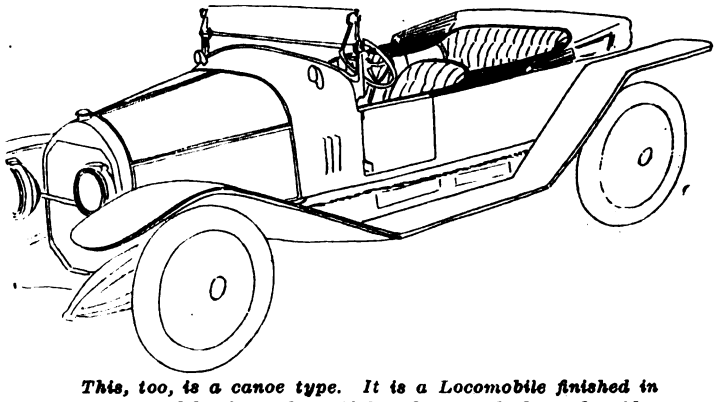
This Brewster model is distinctive because of its unusual top and for the beautiful finish which does not show in the picture. It has a Forest Green body with Forest Brown broadcloth upholstery



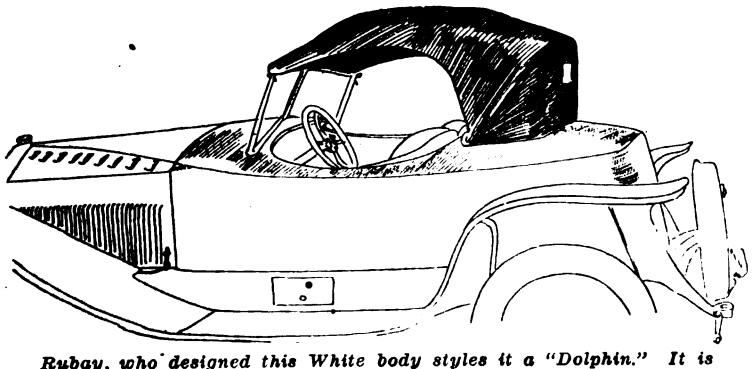
Dictagraphs are used on quite a few of the enclosed jobs; this shows an installation on a Locomobile town car



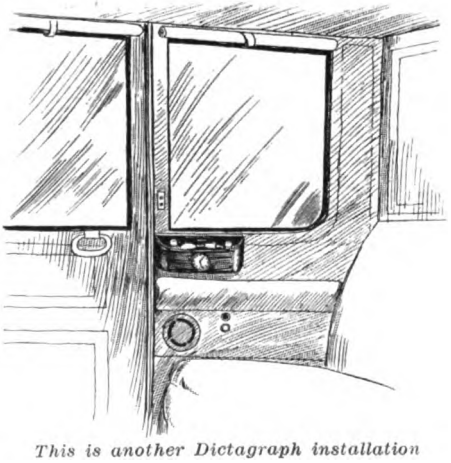
A Daniels touring model upholstered in maroon broadcloth and painted white has a rear windshield that slides down out of sght like the windows in a limousine



This, too, is a canoe type. It is a Locomobile finished in cream and having a beautiful mahogany deck at the sides and at the rear. The side lamps are in the tiny ventilators

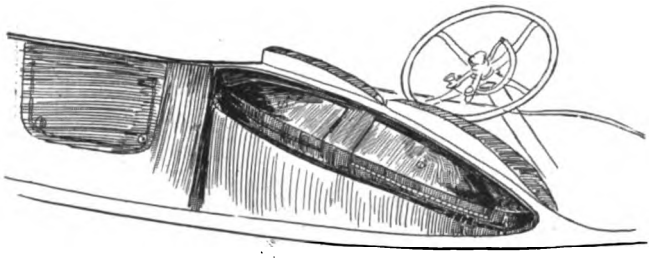


Rubay, who designed this White body styles it a "Dolphin." It is finished in two-tone gray, seats three, and has an extremely narrow and well-fitting top like that on a speed boat



This is another Dictagraph installation on one of the luxurious Locomobile closed models

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There are compartments at the back of the seats in a Locomobile

SETTING MOTOR CAR FASHIONS

(*Continued from page* 49)

are dark mahogany, but in many cases are disappearing entirely.

Of all these features, perhaps the trend toward the satin finish is the most pronounced. Rubay is one of the greatest exponents of this finish, and the bodies on the White and Locomobile chassis are excellent examples of the art. The finish, while flat, is still bright enough to reflect faintly bright lights. An important advantage is that by skillful treatment this finish lends itself admirably to accentuating body curves. For example, instead of the cowl being rubbed longitudinally, it is rubbed around with the curve, and this tends to accentuate the pleasing appearance. One of the Locomobile bodies shows this treatment well.

Satin Finish All the Go

It is pointed out by body designers that this satin finish is more durable than brightly varnished surfaces; it shows scratches scarcely at all; dust is all but invisible on it; frequent washing does not dull the luster as it does with ordinary finishes. Any color can be given the satin finish.

The use of darker colors comes directly from the demand for less obtrusive types. Bright reds and blues and greens are not so much in demand, and in their place have come the darker greens and blues, various shades of gray and plain black. The White company has some beautiful examples, one a coupe finished in two-tone gray and another a combination of beaver brown and black. One of the Phianna touring models has a combination of dark green above a belt running around the body and black below it in satin finish.

Demand From Big Trade Centers

The demand for custom bodies comes principally from a few big cities—New York, for the most part, Chicago to a lesser extent, Boston and Philadelphia. But the business is spreading to a considerable extent. Locke & Co. is shipping a number of bodies to the Pacific coast, for example, and the other body builders are feeling the demand from some of the Western cities. They point out, however, that the prime requisite is the price. These bodies cost a lot, and it is only in the big trade centers that much trade can be built up.

On the average it requires from 4 to 6 months to design a body and fit it to a chassis. Brewster requires 6 months; for certain types of bodies that have been designed for specific chassis, like the White and the Locomobile, for example, Rubay requires a minimum of 5 weeks. This means, of course, that there is no change in the body lines, only the finish being to order. For a body to be designed and finished, Rubay needs a minimum of 15 weeks. Except Brewster, all of whose work is for private owners, these body builders will undertake special jobs for dealers, this requiring that the chassis be shipped to the body builder for fitting.

Prices vary widely and are dependent upon the size of the body, the elaborateness of the fittings, the finish and trim and the upholstery. There is no such thing as a standard price.

Transforming a Stock Job

In this respect, one of the Daniels models, finished completely in white and presenting every detail of a custom job, is an excellent example of what can be done with a stock body. This model has a leather victoria top, wire wheels, special broadcloth upholstery in the tonneau and a special disappearing windshield built into the back of the driver's seat. The addition of these four features to a stock chassis completely alters the appearance of the car and, incidentally, increases its price from $2,800 to $3,400.

The other Daniels models all are finished in a special manner, though the bodies are stock. There is an especially pleasing coupelet with a slanting front and a collapsible seat in the rear deck which sells for $4,000. This is finished in very dark green and upholstered in a soft-textured gray cloth; there is a faint gray striping and wire wheels. Another is a white roadster with the modern sloping rear body line and upholstered in straight grain red leather; in almost any finish the price is $3,000.

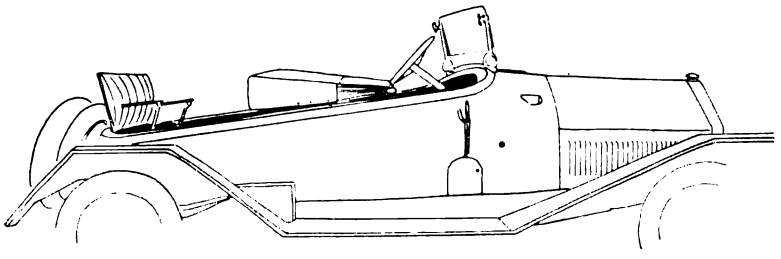
White's Extensive Line

The White company has the most representative exhibition of models, all of them by the Rubay Co., Cleveland. A particularly attractive model is a three-passenger cloverleaf coupe, in which the front is pointed and has individually adjustable front glasses; there are two of these, one finished in beaver brown and black and upholstered in figured tapestry and the other finished in torpedo gray and upholstered in plain brown tapestry.

One of the distinctive cars is the White Dolphin roadster—a car which is frankly "boaty" in appearance. This is in two-tone gray with satin finish, and is equipped with a narrow, close-fitting top that is distinctly nautical. If it were a boat it would have what is styled a transom stern. There is a wide deck all around the body and the three seats, two at the front and one in the rear, are literally molded into the body. The upholstery is a smooth, soft, straight-grain leather, and the windshield is pointed with individually adjustable and overlapping glasses.

Another interesting model is a Locomobile four-passenger roadster in which the rear seats are individual and fitted with separate arm rests. This car is satin finished in a dark green, an unusual feature being the beveling of the top body line. There is a fully-lined, snug-fitting top, and in place of the usual celluloid lights there is heavy glass.

Roadsters lend themselves most completely to the fancy of the designer in that they permit the use of body lines which slope smartly to the rear and give the nautical effect so much sought after. Two excellent examples are on the Lancia chassis. One of these, styled the Hydroplane, is finished all over in unrelieved bright maroon. It is minus the usual windshield, top and running-boards; the front fenders are widely flaring and the rear fenders hug the wheels tightly and are sharply pointed where they extend toward the road. A completely collapsible and disappearing rear seat for two increases the capacity on occasion, but does not alter the body lines. The other Lancia is a somewhat less compelling job, though the body



Note the severe lines on this Lancia roadster. These are the lines that will be fashionable for they represent what the master body builders are doing

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lines are almost exactly similar. It has a clever one-piece windshield in which the usual top binding is missing, and instead of curved fenders these are of angular design.

Brewster has perhaps the most attention-compelling roadster. This is styled a club roadster and is finished in English vermilion and Brewster claret, with claret colored broadcloth upholstery. It is equipped with a top which is completely hidden behind the front seat, but is swung up into place in a few seconds. A folding rear seat for two ordinarily is completely out of sight. This car sells for $6,500. Another Brewster job, which is altogether unusual, is a 5-passenger phaeton which has a forest green satin finish and forest brown running gear and broadcloth upholstery. It is equipped with what is termed a buggy top, this being a new type of Victoria top in which mahogany bows are exposed and the sides are open. The top itself is covered with long-grain, dull-finish black leather. The price of the car is $7,350. A distinctive feature of all the Brewster models is the use of a windshield with a 4-in. overlap.

Locomobile is another which has an exceptionally extensive exhibit. All the bodies are designed by the custom body department of the Locomobile company, and are built by body builders of recognized ability, such as Healey, Holbrook, Brewster, Rubay, etc. A particularly attractive model is a sport cabriolet in which the body is completely collapsible. It is finished in cream and black, only the top being black. An odd idea is the use of tiny running lamps inserted in the corners of the windshield instead of mounted on the body.

Another Locomobile model has a Healey body, and is styled a canoe roadster. This is a distinctly nautical type, satin finished in Willie's pale automobile yellow with glossy black straight-grain leather upholstery and dark mahogany trim. There is a broad deck running completely around the body and brought to a point at the rear. The running lights are set at the bottom of miniature ship's ventilators which stand on the cowl. A 4-passenger Locomobile which gives an appearance of extreme neatness, has a blue green satin finish with a broad white stripe. This has black leather upholstery and bright trimmings.

The one touch which stamps a body as being undeniably a custom job is the extreme care in the treatment of detail. Parts show that they have been designed with the thought of unity; the windshield fits the body; fenders hug the wheels; moldings are unobtrusive; small parts are finished in a manner which shows the workmanship of the high-class, high-price mechanic.

Heavy Service Truck Developed by Packard

Four-speed Gearset and Thermostatic Water Control will Increase Efficiency—Capacity 5 tons

DETROIT, Jan. 6—The Packard Motor Car Co. is now ready with a new series of 5-ton trucks which will be styled the Heavy Service type. This model is the same as previous models of the same capacity, except that it has a four-speed gearbox, a centrally located gearshift lever, and thermostatic control of the cooling water. Worm drive is used. The list price with standard equipment is $4,300.

The four-speed gearset and the use of the thermostatic cooling water control are designed to have a material effect in increasing the efficiency of the vehicle. The gearset is especially adapted for moving heavy loads, and provides a wider application of motor effort. There is an extra-low gear to give maximum tractive effort, giving an advantage in starting heavy loads on grades and under bad road conditions. Furthermore, with the choice of four speeds greater speed can be made on hills, due to the possibility of operating the engine at just the right speed. The fourth speed, which is direct, is slightly higher than usual.

The motor is a block L-head design with 5 x 5½-in. cylinders, and is automatically governed for a maximum vehicle speed of 11 m.p.h. A special high-speed type of truck with Sewell cushion wheels and capable of 13 m.p.h. can be supplied.

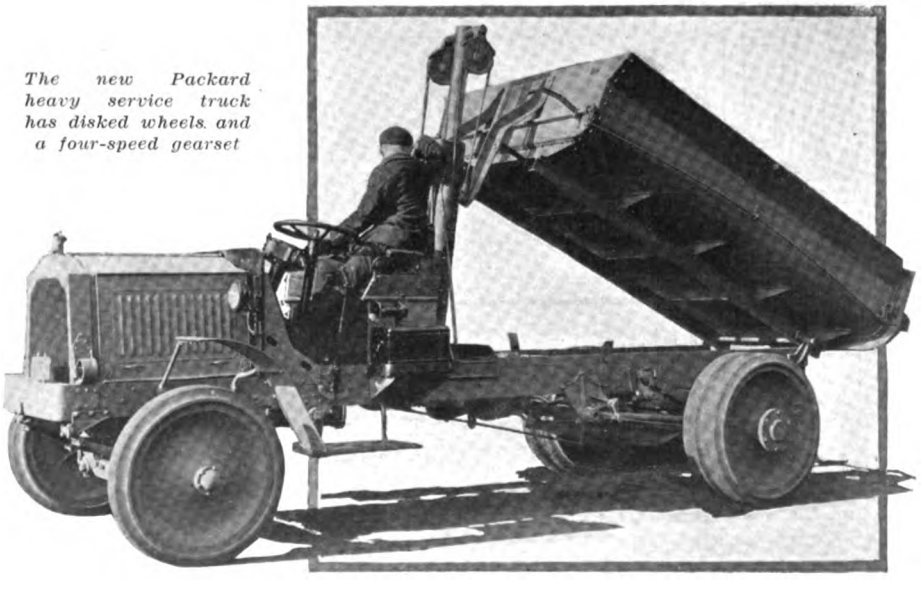
A feature of the crankcase casting is that it has a horizontal web protecting the carbureter and motor accessories from mud and water. In making repairs and adjustments the entire bottom pan can be dropped without disturbing the main bearings. There is a separate housing bolted to a flange on the crankcase back of the flywheel housing and holding the clutch.

Power is transmitted through a Packard dry-plate clutch, which may be removed as a unit if necessary without disturbing the motor or steering gear. The driving connection between the clutch and the gearset is a double-fabric disk type of universal joint having pressed-steel guards. Final drive is through a built-up rear axle in which the worm is mounted above the wheel, permitting ready disassembly without taking the axle from the truck. Springs are semi-elliptic, front and rear, and the wheels are cast steel, disk type.

Two lengths of wheelbase are furnished, the standard being 13 ft. and a longer one being 15 ft. 6 in. The platform length is optional, and, although there is a standard body, purchasers are furnished with body builders' prints so that any desired equipment can be obtained.

Continental to Double Production

DETROIT, Jan. 6—The Continental Motors Co. will be succeeded by a new company, capitalized at $18,500,000, which will take over the entire assets, business and good-will of the present company. The new company will be styled the Continental Motors Corp., and will have practically the same board of directors, with the addition of two new members. The control and management of the company will remain in the same hands. The increase in working capital will permit the production to be doubled by the end of the year. Rapid progress is being made with extensions to the factories.



The new Packard heavy service truck has disked wheels and a four-speed gearset

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A Department of
Better Mechanics
No. 5

CARE AND REPAIR OF BORG & BECK CLUTCH

Evidence of Trouble

1—Grinding or clashing of the gears, especially the first speed gears when shifting.

This indicates that the facing of the clutch brake (see Fig. 1) is worn and must be either adjusted or relined.

2—Continual slipping of the clutch, that cannot be stopped by draining and cleaning with gasoline or by adjustment.

This may be due to either excess oil in the clutch casing or to worn friction rings; the excess oil may leak in through the dam which separates the front oil reservoir from the flywheel case. The transmission must be removed and the clutch taken down.

3—Slipping of the clutch, followed by chattering and grabbing. This indicates that the asbestos friction rings are glazed and should be replaced, requiring that the clutch be removed.

4—Actual failure of the clutch to operate, or excessive noise when the clutch pedal is pushed out, indicating that the clutch spring or some of the operating members are worn or broken, and hence necessitating a removal of the clutch.

(*Ordinarily a washing and adjustment of the clutch will place all parts in good condition. Unless it is positively indicated that a removal is necessary, cleaning and adjustment should always take place before tearing the clutch down.*)

To Clean the Clutch

1—Remove drain plug at bottom of clutch housing.

2—Remove clutch inspection plate.

3—Loosen clutch flange retaining bolts, holding flange to flywheel. *DO NOT* loosen these bolts more than ¼ in.; just enough to allow the oil to drain away.

4—Squirt a little gasoline into the clutch, washing out the residual oil.

5—Tighten clutch flange bolts.

The clutch may slip for a short time until all the oil has been squeezed out. But if it continues to slip or grows worse, there must be a leakage from the crankcase that must be stopped, and hence the clutch must be taken down.

To Tighten Clutch

The adjustment should always be checked when cleaning the clutch.

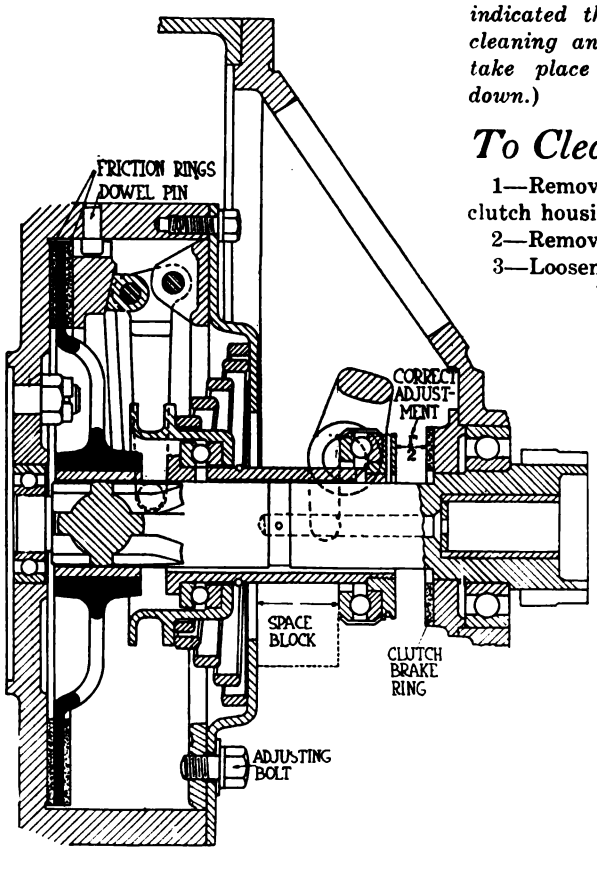
1—Turn crank until one adjusting nut (Fig. 2) comes to view. Loosen about three turns.

2—Turn crank until other adjusting screw comes to view. Loosen about three turns.

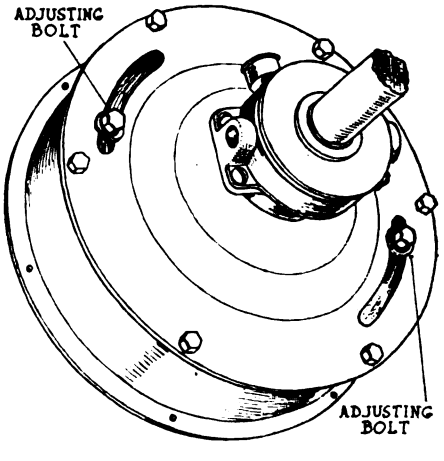
3—Hold clutch pedal way down.

4—Tap the adjusting nut, forcing it "clockwise" in the slot about ½ in.

5—Let up pedal. The distance between the clutch brake and lining, Fig. 1, should be ½ in., and the adjusting bolts should be turned until this is the case. If the adjusting bolts have come to the ends of the slots, remove and screw them into the "repeat" holes at the other end of the slot.



Left—Fig. 1—The important parts of the clutch are marked. Note the correct spacing of the clutch brake, the position of the space block, the dowel pin, and friction rings.



Right—Fig. 2—By loosening the two adjusting bolts and shifting them in a clockwise direction, the clutch is tightened.

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6—*Note whether clutch pedal, when in, has at least ½ in. clearance at the footboard.* If not, turn adjusting ring until this is the case. *Otherwise the clutch will be prevented from seating.*

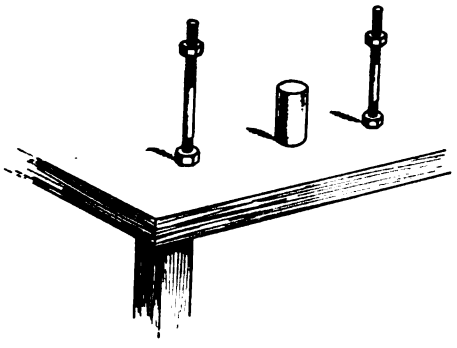


Fig. 3—Detail of a simple clutch compressor

To Repair Clutch Brake

This brake is designed to stop the spinning of the clutch and to prevent gears clashing when shifting. To examine:

1—Press clutch pedal way down.

2—Examine brake and see whether it actually touches the collar or not. If it does not touch, the transmission must be removed. *Note how far it comes from touching.*

REMOVING GEARBOX

3—To remove gearbox. This method may vary somewhat in the different cases.

1—Remove any of these that may be present: Speedometer drive, wiring, screens in rear universal joint flange, air pipe connections, clutch and brake rods. Strip the gearbox free from everything but its attachment to the clutch housing.

2—Remove nuts and washers from studs holding transmission case to clutch housing.

3—Slide back toward rear of car about 6 in. and drop.

4—Examine clutch brake friction band. If in good condition, it will not be necessary to install a new one, as a metal washer placed between it and the shoulder on the main drive pinion will raise it sufficiently to touch the brake. *The thickness of this washer depends on the distance the clutch brake and flange were apart, as shown in No. 2.*

5—Unscrew clutch brake (*THIS IS A LEFT HAND THREAD*) and place the metal washer between it and the drive pinion. It is better to reline the clutch brake after washers amounting to ⅛ in. have been installed.

6—If the clutch brake facing is worn very thin or glazed it should be removed and a new one riveted on in its place. Copper rivets should be used, and they should be countersunk well beneath the surface of the facing. (See Fig. 5.)

Providing the adjustment of the clutch is O.K. and the friction rings are in good working order the gearbox may now be assembled.

To Remove Clutch

Necessitated by worn clutch rings, actual failure of the clutch to operate or continued presence of oil after repeated cleanings.

1—Mark clutch cover and flywheel so that the cover may be replaced exactly as removed. If the cover should be replaced wrong, the clutch will not operate.

2—Throw clutch out and lock by placing a block of wood, as shown in Fig. 1.

3—Remove clutch cover bolts.

4—Draw clutch out.

If all working members are in good condition and not worn excessively new friction rings should be slipped in place and the clutch assembled. *It may, however, be necessary to completely dismantle the clutch in order to replace the spring or some worn member.*

To Dismantle Clutch

1—Place clutch on compressor, shown in Fig. 4, and tighten the stud nuts.

2—Remove the distance block.

3—Unscrew retaining collar.

4—Remove stud nuts of Fig. 4, permitting clutch to come apart.

5—Examine all parts for wear and replace worn parts.

6—Reassemble clutch, using compressor shown in Fig. 4.

7—Place distance block in position, and remove clutch from compressor.

8—Place friction ring, then clutch plate in flywheel, followed by the other friction ring.

9—Then put the clutch assembly in place, making sure that the dowel pins, or set screws, are in place on the inside rim of the flywheel, and that they fit into the slots of the driving plate.

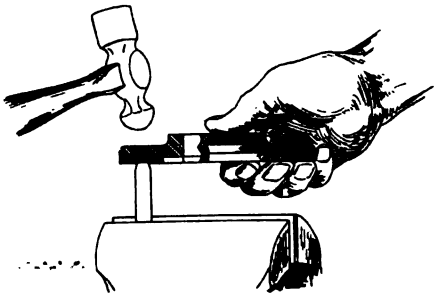


Fig. 5—The clutch brake ring may be riveted to its flange, but the friction rings of the clutch should run loose in their working seats

10—Replace clutch, cover bolts, making sure the cover is on the same position as removed.

11—Replace transmission, drive shaft, etc.

12—Check up adjustment of pedals and clutch as outlined, and see that clutch brake is working all right.

13—Grease all parts and replace miscellaneous fittings.

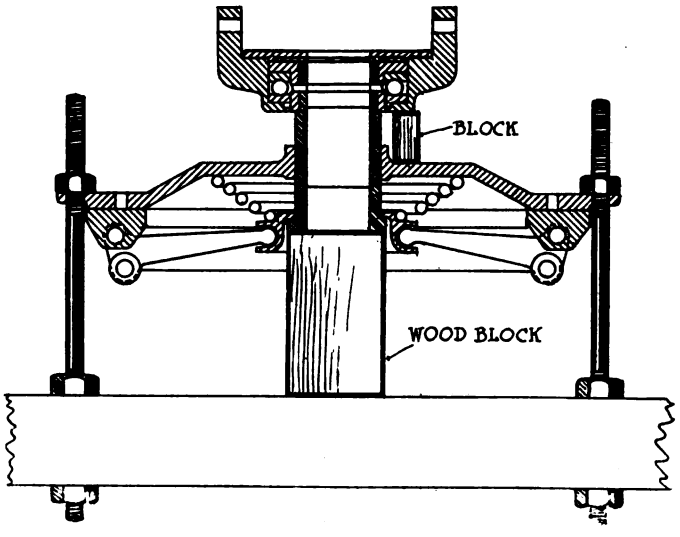


Fig. 4—The clutch compressor in use. If an arbor press is at hand, it may be used in a similar manner. Note the block that is used to hold the clutch in the out position.

A Comment from a Mechanic

Let us have yours—It Will Help All of Us

In reference to your "Better Mechanics" movement, I wish to say that I am very much interested. I hope your columns are open to comment as to the different methods used in repairing automobiles.

In your first article, paragraph eleven, under the head of "To Remove Motor," I note that you advise the removal of the nuts that hold the fan pulley to the crank shaft flange. There is some uncertainty as to mechanic being able to

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remove the nuts, as the bolts that pass through the flange and pulley are not a tight fit.

A much more rapid method is to drive out the taper which passes through the

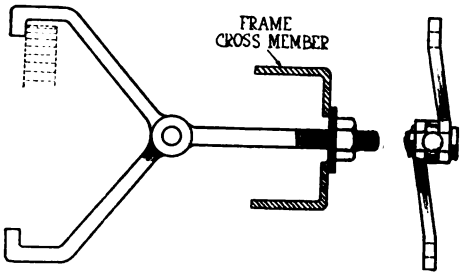


Fig. 6—A fan pulley puller for the Overland 75. It is also used as a steering wheel puller

flange and shaft and use the puller which I have devised and am enclosing sketch. (See Fig. 6.) I might add that this puller, by changing the position of the screw so that it comes between the legs, is very convenient in removing the steering wheel spider from the post.

In paragraph 19, under the same, when the mechanic is to fit the bearings only it is unnecessary to remove the cylinder head. I believe that this should come under valve grinding. [It would properly come under that head, but it is scarcely ever amiss to clean the carbon out and grind the valves.]

In paragraph eight, under the head of "The Repair," I believe it is a waste of time and equipment to use the devices you illustrated in Fig. 9 for, if the mechanic will remove the rings and insert the pistons in the cylinders each time he spots the bearing, the alinement of the crankshaft bearings and pistons are bound to be true.

I am enclosing a sketch of a gear puller, which will be found convenient to use on the Overland 75 timing gears. Being adjustable it will pull any one of them. (See Fig. 7.)

I wish to congratulate you for the interest you take in the automobile business at large, and hope you are to continue the articles for the benefit of me-

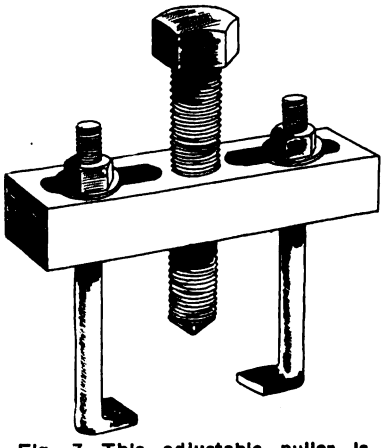


Fig. 7—This adjustable puller is used on the Overland timing gears.

chanics for a considerable length of time.—E. W. Mays, Raton, N. Mex.

What Every Mechanic Should Know

S.A.E. and U.S.S. Tap Drill Sizes

(*From the S. A. E. Data Sheets*)

The tables appearing under this head are invaluable to the mechanic. Cut them out and keep them for a ready reference

S. A. E. TAP DRILL SIZES

Sizes of Taps, In.-Thds.	Drill Sizes in Inches
1-4 x28	7-32*
5-16 x24	17-64
3-8 x24	21-64
7-16 x20	3-8
1-2 x20	7-16
9-16 x18	1-2
5-8 x18	9-16
11-16x16	39-64
3-4 x16	43-64
7-8 x14	25-32
1 x14	29-32
1 1-8 x12	1 1-64
1 1-4 x12	1 9-64
1 3-8 x12	1 17-64
1 1-2 x12	1 25-64

*No. 5 Drill gage.

U. S. S. TAP DRILL SIZES

Size Screw, In.	No. of Threads per In.	Drill Size, In.	Size Screw, In.	No. of Threads per In.	Drill Size, In.
1-4	24	.201	15-16	9	.808
1-4	20	.191	1	8	.854
3-16	18	.248	1 1-16	8	.917
3-8	16	.302	1 1-8	7	.957
7-16	14	.354	1 1-4	7	1.082
1-2	13	.409	1 3-8	6	1.179
1-2	12	.402	1 1-2	6	1.304
9-16	12	.465	1 5-8	5 1-2	1.412
5-8	11	.518	1 5-8	5	1.390
11-16	11	.581	1 3-4	5	1.515
3-4	10	.632	1 7-8	5	1.640
13-16	10	.695	1 7-8	4 1-2	1.614
7-8	9	.745	2	4 1-2	1.739

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Cleveland's Show Draws 80,000 People

Function Is Most Successful Ever Staged in Lake City—Business Results, and 1917 Is Hailed as Year of Continued Prosperity.

By Allen Sinsheimer

CLEVELAND, Jan. 6—More than 80,000 people attended the Sixteenth Annual Show during the past 8 days, and made it the most successful event of its kind that have ever been held here. Approximately 400 cars were sold at retail, while estimates place the wholesale business high above $1,000,000, and exhibitors state that a conservative total of new prospects secured directly through the show would place it at 3,000. The exhibit was held in the Wigmore Coliseum where the floor space which includes 66,000 sq. ft. was divided with 46,000 sq. ft. for display and 20,000 sq. ft. for aisles.

220 Cars Shown

Forty-six exhibitors with 220 cars, and 22 accessory displays completely filled every available foot of space. Cleveland distributers in some instances include sections of West Virginia and Pennsylvania and all of Ohio in their territory, and it is estimated that more than 1500 dealers from every corner of the territory attended. Records of wholesale sales showed orders running as high as 100 carloads for a single make of car.

The attendance was especially large on New Year's Day, Wednesday and Saturday. Deducting all dealers' and season passes, more than 12,500 people visited the show on Wednesday, and the total attendance of 80,000 established a record of 30 per cent more than last year when 60,000 were present.

Actual cash sales for tickets of admission included $4,870 on New Year's, $3,180 on Wednesday and $1,618 after 6 p. m. on Thursday, figures that are 35 per cent above those of 1916.

All of the exhibitors reported that business during the show and in the past 6 months, has been the most prosperous in their history, and judging by the number of prospects predict even greater success for the coming year.

Willys-Overland, Inc., which is the Cleveland branch of the Willys-Overland Co., and controls 8 Ohio counties, sold 122 cars at retail and more than 200 cars at wholesale for immediate delivery. Retail sales came so rapidly that 21 cars were sold Jan. 1, and 16 during the opening night.

The Ohio-Buick Co., including 32 counties within its territory, sold 39 cars at retail and more than 900 cars at wholesale, the wholesale business running 85 per cent above the sales of 1916.

The Ford branch in Cleveland includes most of Ohio and a part of Pa. in its territory. Sales to dealers were reported to breaking all records and retail business was said to be between 150 and 200 cars.

The Studebaker Sales Co., which controls all of Ohio and Pittsburgh and adjoining territory sold 28 cars at retail and 100 carloads with an estimated value of $300,000 at wholesale. These sales were far ahead of last year's.

The Hudson-Stuyvesant Motor Co., distributors of the Hudson, in 36 counties which extend into W. Va., averaged slightly more than 2 cars per day at retail and reported an excellent wholesale business. The company has acquired 12 additional counties within the past year and states that it enjoyed a remarkable business just prior to the price increase and following the introduction of new models.

The Grant-Wellock Motor Co., local agents for the Grant car, sold more than 15 cars.

The Carris-Franklin Co., which handles the Franklin car in Cleveland reported that sales would probably total 10 or more cars. Six cars had been sold in the first 6 lays.

All Report Good Business

All other distributors reported equally prosperous business and in every instance were greatly elated over the huge number of substantial prospects secured by means of the exhibition. Many had enjoyed such a remarkable business during the past few months that they were doubtful of good returns from the show and have been surprissed at the results.

"Intensive cultivation" of a large secton of the state, as well as the city of Cleveland, resulted in an out-of-town attendance past the 40,000 mark, according to the best estimates of the various registries. In addition to the usual channels of publicity, many special stunts were sprung. City lampposts along Euclid avenue's "white way" were mounted with decorative signs announcing the show, and the retail merchants board of the chamber of commerce recommended with effect the trimming of windows in downtown stores in keeping with the show.

The Cleveland show has for several years made a specialty of the decorative background. The scenic spectacle this year was known as "The Colonnade of Boabdil," having been adapted from the famous Alhambra at Granada, on sketches by Charles D. McCormick of the Halle Bros. Co. The Moorish design gave unusual opportunity for richness and striking color combinations.

The scores of pillars in the coliseum were surmounted with graceful arches carved with Morisco fancifulness as actually found in the famous "red castle". Upon these were stenciled arabesques and various oriental designs in azure, vermilion and other brilliant hues. The series of arches supported a ceiling in representation of the unrivaled Moorish tiles worked out in a dozen different color combinations. Illumination was from 700 Arabian lanterns, each inclosing a 250-watt nitrogen lamp.

The Cleveland show is given by a mutual organization of dealers, with Fred H. Caley as manager.

Farm and Industry Will Furnish Car Prospects

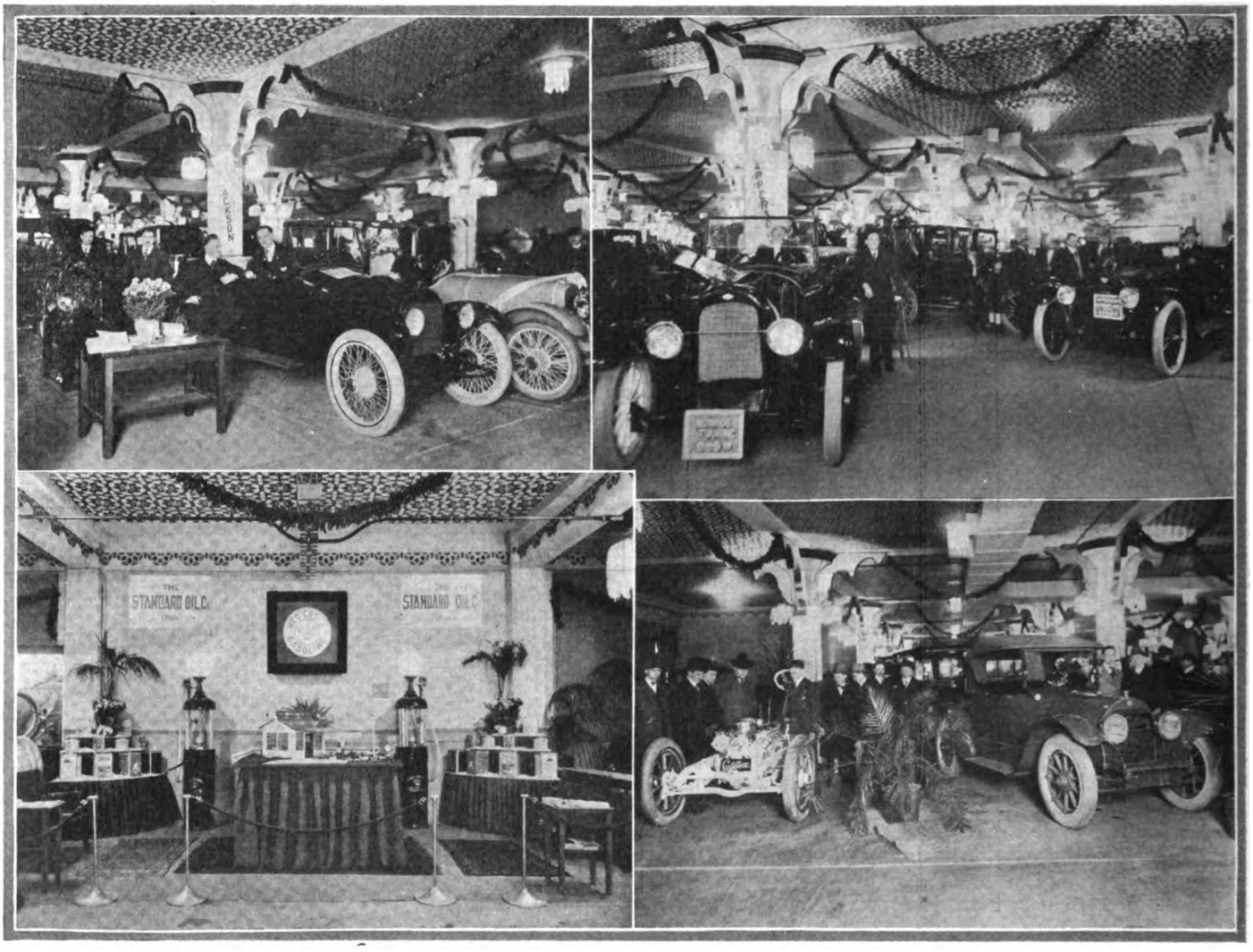
Both Are About Equal in Providing Buyers—Boom in Manufacture Makes Many Sales

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CLEVELAND, Jan. 6—Dealers in Cleveland and in the Cleveland territory are now estimating that the next year's business will come in equal proportions from the farming and industrial centers. Farmers throughout the state have become more prosperous during the past year, while the number of mechanics, factory foremen and others engaged in industrial pursuits has increased greatly in the last year with the growth of many companies and the introduction of others. Wages have increased in many instances and there are numerous prospects at present among all classes from skilled workers to shop superintendents.

The steel and iron industry, paint and

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Exhibits at the Cleveland show were for the most part well thought out and arranged with an eye to their merchandising value. Here are some of them.

varnish business, motor car production and garment manufacture of Cleveland has grown within the past 12 months and have created thousands of positions, gathered millions of dollars into the city and brought a general prosperity which is certain to make 1917 the biggest motor car year in history.

Bank clearings for 1916 were $2,473,916,000 a total gain of $923,000,000 above 1915 when the bank clearings amounted to $1,555,000,000. Bank deposits in the past year reached the high mark of $480,000,000, a gain of $104,000,000 above the year preceding.

There has been a general expansion in every direction. Motor car makers have paid more than $1,000,000 for building construction and over $33,000,000 has been spent by other manufacturers and home builders for the erection of numerous structures. As a gage to the business transactions it might be stated that 8000 new homes were built in Cleveland in the last 12 months, 250 corporations within the city limits pay annual wages of $200,000,000, local industries manufactured $81,000,000 worth of motor car accessories in 1916, and that more than 700,000 tons of ore was consumed by iron and steel manufacturers, in Cleveland, while 60,000 motor cars were produced with a value of $69,000,000.

All of the cities and towns of Ohio, Pa. and other nearby states have witnessed a remarkable prosperity, and a great growth of industrial concerns. Clearings in each city tell the same story of a most successful year and dealers from Akron, Columbus, Pittsburgh and the hundred different towns state that business in all industries is growing on a scale greater than has ever before been experienced. Akron, for example, has increased the number of motor cars within its boundaries by more than 35 per cent. The rubber industry, and the huge cereal companies have enjoyed vast growth. The number of rubber workers of Akron are now almost equal to the city's total population of 1910.

In view of these conditions and the unprecedented prosperity of the past year plus the results of the show, Cleveland distributers look forward to great success for 1917, and indications seem to substantiate the opinion.

Exhibits Better This Year Than Last Season

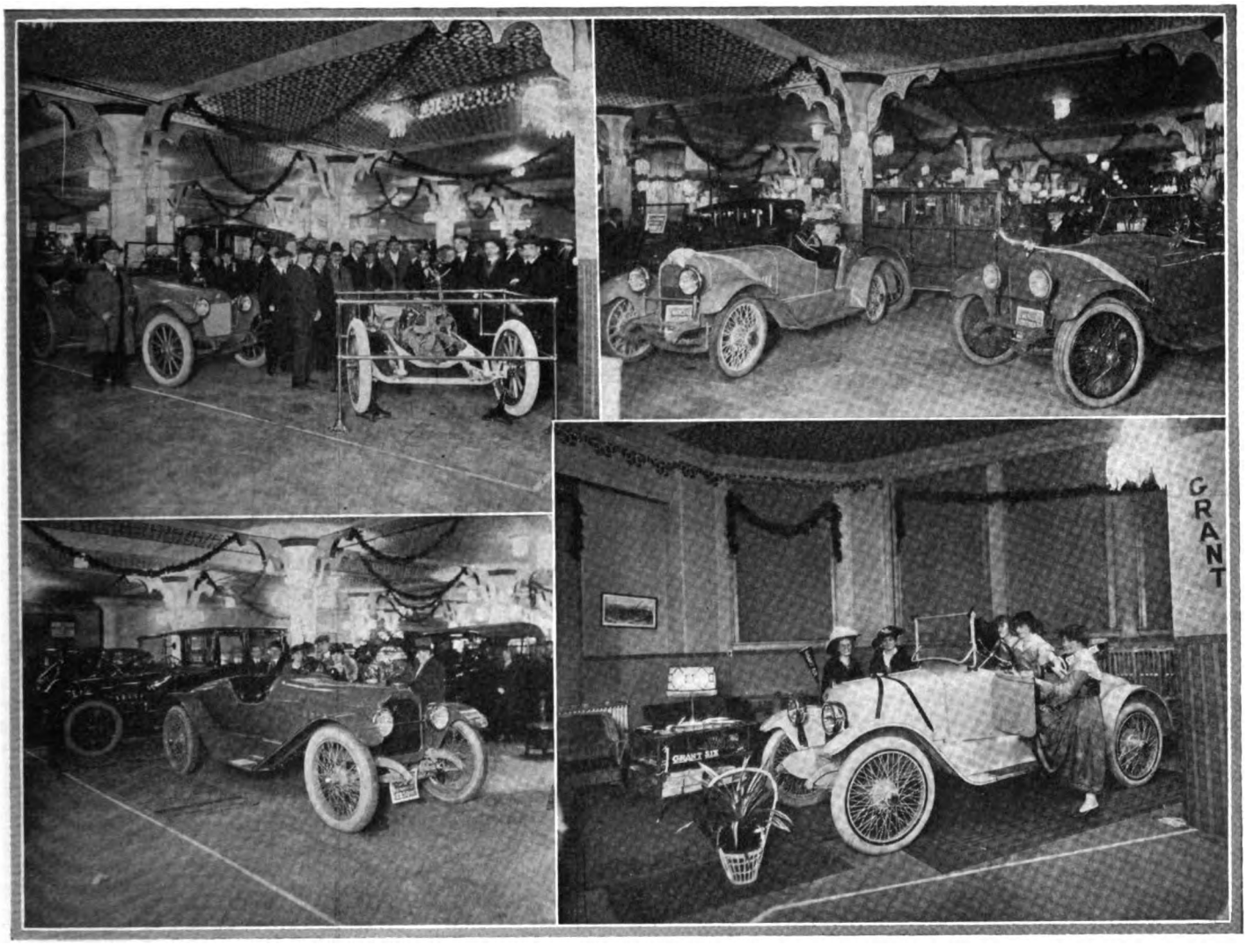
Several Dealers Take Advantage of Criticisms Made by Motor World in 1916

CLEVELAND, Jan. 6—Last year Motor World classified the exhibits as very good, might have been better, and could not be worse. There were very few in the very good class, a fair number of the might have been better, and entirely too many in the could not be worse.

The exhibits this year, display a marked improvement over those of 1916. True, there are still many that could not be worse and a number that might have been better but there has been a noticeable increase among those that are very good.

Probably, Peerless, Franklin, Jordan, Hudson, Winton, Owen Magnetic, Studebaker, Paige, Grant, HAL, and Cadillac might be said to belong to the very good class, with a number of others running

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Last year, Motor World characterized the Cleveland exhibits as Good, Not So Good and Couldn't Be Worse; this year there are not so many of the latter class

closely behind them. Carpets, rugs and flowers were very much in evidence and tended to improve the exhibits to an appreciable degree.

There were a few however who still persist in the could not be worse class. Some of these, including one of the largest distributors, displayed their cars with bare floors, little regard for position, and without desks, chairs flowers or other decorations.

Many others in the might have been better class had rugs without palms or flowers or desks, or had palms and flowers without rugs or chairs, while in some instances they had all of the paraphernalia essential to a beautiful display but had their cars so crowded or carelessly arranged as to destroy the effect of the decorations.

Accessory Show a Fizzle

CLEVELAND, Jan. 6—The first separate accessory show to be held in the Motor car industry closed tonight in this city and the situation can be summed up only in the statement that the show was not a success. It was operated entirely separately from the regular automobile show across the street and it was necessary for show visitors to pay two separate admissions if they cared to attend both shows. The result was that while thousands attended the car show, few went to the accessory show. This seems to indicate that the public will not pay money to attend a purely accessory show.

Since accessories are closely allied to cars and are always considered as an adjunct to the car business, it is the belief of the trade leaders here that an accessory show cannot be a success unless it is made a part of the car exhibit. This is taken to mean that when the accessory show is held in a separate building, as was the case here, one admission should cover both shows. With this arrangement the show visitor would pay for admission to both exhibits when he bought his ticket and naturally would feel inclined to use both sections of it.

There were 80 exhibitors in the accessory show. The proposition was promoted by the people in the M. & M. Co., an accessory house, and the attendance was very unsatisfactory to the management.

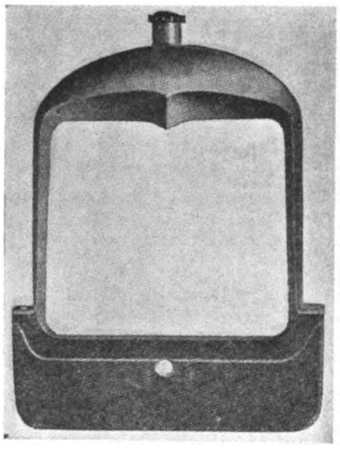
Arthur Holmes to Make Air-Cooled Car in Ohio

CANTON, OHIO, Jan. 8 — Arthur Holmes, formerly vice-president and chief engineer of the Franklin Automobile Co., Syracuse, and C. H. Rockwell, former sales manager of the Franklin company, have combined with Western capitalists and formed the Holmes Automobile Co., which they have incorporated for $2,500,000. The company will make air-cooled engined automobiles, and will erect a plant in this city. Temporary offices have been opened and temporary manufacturing quarters obtained.

Ivan Goodrich in Added Role

PHILADELPHIA, Jan. 9—Ivan F. Goodrich has become manager of the wholesale and retail sales of the Philips-Brinton Co., this city, maker of the Philbrin system of battery ignition. This work will be performed in conjunction with his duties as general representative of the Globe Machine & Stamping Co., Cleveland, and president of the Goodrich-Lenhart Mfg. Co., this city.

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A special radiator shell for the Ford, made by the Superior Lamp Mfg. Co.

87 ACCESSORIES ARE NEW

(*Continued from page 32*)

Several New Pratt Jacks

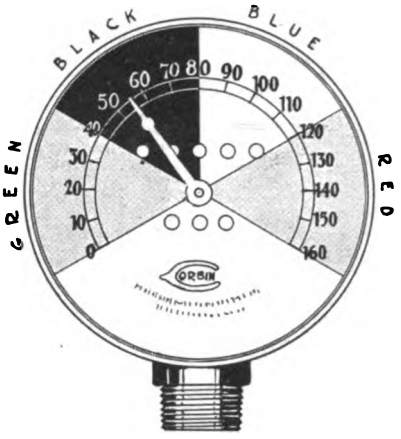
A wire mat for runningboards having spring hook attachment to facilitate removal for cleaning, etc., and selling at 75 cents, is of the new things at the Pratt exhibit. There is also a mud puller jack which is a combination of a pulling device and an ordinary jack. Price $2.50. A movable step jack is another feature, this construction enabling the operator to meet all sorts of conditions such as rough road surface, flat tire, car sinking in mud, etc. Price $2.50. This jack is made in all sizes from 8 in. up.—William E. Pratt Mfg. Co., Chicago.

E. A. Electric Clock

There is a new E. A. horn for Fords and an electric clock which are exhibited for the first time. The horn is of the vibrator type and adapted for operation on the Ford flywheel magneto. It sells for $2.50. The electric clock attaches to the storage battery of the car and winds automatically every 24 hours, no winding or adjustment being necessary, and the clock is built to withstand the shocks of the roughest roads. Price $15.—E. A. Laboratories, Inc., Brooklyn, N. Y.



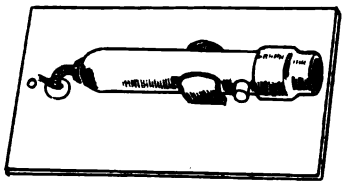
The Gemco tilting wheel may be easily installed on the Ford, has either a corrugated or plain rim of 17-in. diameter. The corrugated rim type sells for $4.50, the plain for $3.65



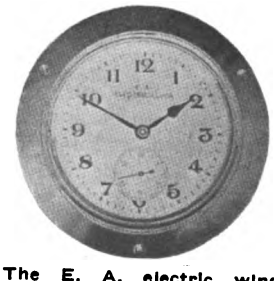
With a 160-mile capacity, and a quick-reading dial, the new Corbin speedometer is distinctive

Superior Wire Wheels for Fords

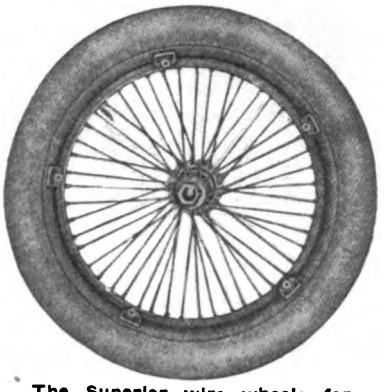
New things in the Superior line comprise a radiator shell for 1917 Fords, wire wheels for Ford cars with demountable rims and numerous other products. The radiator shell has an apron attached covering the Ford front axle, the shell having a V-tapering top, designed to give an elegant effect when slipped over the radiator. The regular hood is retained. Price, in black finish, $8; nickel finish, $10.50. The wire wheels with demountable rims are furnished complete with ball cups, dust caps, wrench, nuts, etc., the right front hub being arranged for speedometer gear and the rear hubs with brake drums, etc. Use of demountable rims obviates possibility of spokes working through the rims and pinching the inner tubes. A set of four wheels complete with rims weighs 130 lb. There is one extra demountable rim included in the price of $40. The wheels are finished in black baked Japan with nickel plated caps. The Superior company is also showing a large line of various types of custom made brass and nickel lamps for special body work in addition to its regular line of automobile lamps.—Superior Lamp Mfg. Co., New York.



The Handy cigar lighter is a neat accessory for any car



The E. A. electric winds automatically, an dis built to withstand vibration



The Superior wire wheels for Fords are demountable

Tire Holder for Chevrolet

At the Gemco exhibit is a new tire holder especially for Chevrolet 490 cars combining rear lamp and license carrier. The device employs two substantial hooks and bolts directly to the frame, requiring no drilling or mechanical changes. It weighs 21 lb. and sells for $4 complete with straps. At this exhibit is also shown the Gemco steam vaporizer for mounting on the exhaust manifold, the steam generated being injected into the intake manifold. This device is claimed to eliminate carbon and to increase power while reducing fuel consumption. Ford size sells for $11; other sizes, $12.—Gemco Mfg. Co., Milwaukee.

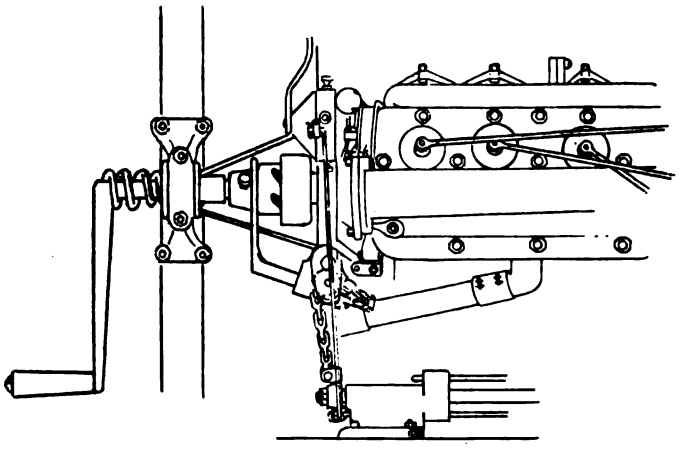
Aitchandee Is Improved

A new type of Aitchandee shock absorber appears at the show. It adheres to the standard Aitchandee principle of construction, embodying leverage arm and spring, except that each unit of the new type comprises two arms and springs, the new model being known as the Twin Aitchandee. It sells for $12 per set of four as compared with $10 per set of the single type. The Aitchandee safety spark retarder for Fords is a simple little attachment to the spark control rod extending from the bottom of the Ford's steering column to the timer. The device automatically retards the spark when the crank is pushed in and can be set to bring the spark lever to any notch. It is easy to attach, having only one pin and one bolt to change. Price $3.50.—H. & D. Co., Inc., Goodland, Ind.

Handy Cigar Lighter

A small, convenient, electrically operated device whereby pressure on a button passes the current through resistance wires, causing them to become almost white-hot. This lighter top has a coil-wound heating unit, and is so constructed that a draft is circulated through it when not in use. Three types of lighters are made, the No. 1 being designed to set in flush with the woodwork or trimming, the No. 2 for attachment in any position without cutting into the car, and the No. 3, of the non-reel type, having a spring bracket to hold it in position. The reel types are so constructed that they may be drawn out for use, and are auto-

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Left—The Aitchandee safety spark retarder for Fords. When the starting crank is engaged, the spark is automatically retarded



Right—Dial of the Hamilton Multometer, as mounted on the dash. On the rim are shown the items that are recorded, and any one may be read by turning its respective odometer to the slot; the record of tire No. 4 now being in view. Note the speedometer dial at the left

matically rewound when through. In the wound position they are held close to the panel and all current is cut off. To aid the dealer a neat assortment display board is provided consisting of two No. 2, one No. 1, three No. 3, one 6-volt and one 12-volt tip. Price, complete, $27; No. 1 or No. 2 lighter alone, $6. No. 3 lighter, $2.50.—A. J. Picard & Co., Inc., 9 West Sixty-first Street, New York.

Hamilton Multometer

Thirteen odometers, operated in sequence by a series of spring pawls, keep a continuous record of the thirteen important elements of the car. The casing holding the odometers is mounted on the dash, and carries the thirteen odometers, so arranged that any one of them may be turned to view behind the dial, and so that any one of them may be thrown out of operation at will. A single cable drive from a front wheel actuates the spring pawls that in turn operate one odometer at a time, causing it to register the data it is designed to keep. One odometer, and only one, is in operation at any one time, hence the device drives as easily as the ordinary speedometer, which it incorporates. A record of each of the four tires, each of the spare tires, the trip mileage, the total mileage, the gasoline and oil record and the rate of travel are a few of the things that the multometer records. It may be installed in any car. Price $60.—Hamilton Corporation, Lancaster, Pa.

Champion Minute Spark Plug Cleaner

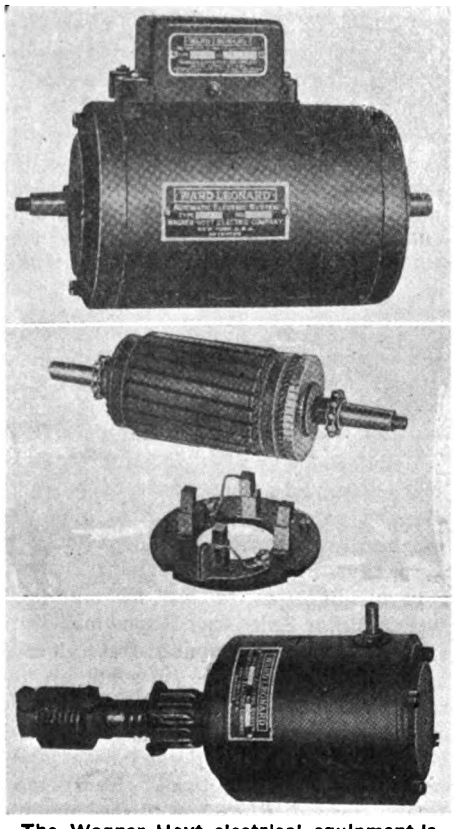
This spark plug cleaner enables one to clean the plugs without taking them apart. It comprises a tube, about 6 in. long and 1 in. in diameter, sealed at one end and having at the other end a bushing into which the plug to be cleaned is screwed. The tube contains many small steel needles, and is half filled with gasoline, the combined action of the two removing the carbon under vigorous shaking. It sells for 75 cents.—Champion Spark Plug Co., 1414 Upton Ave., Toledo.

Wagner-Hoyt Electric Equipment

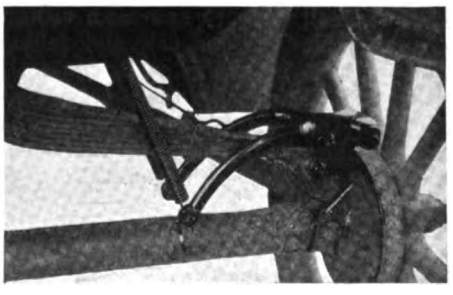
The Wagner-Hoyt company exhibits a full line of electrical equipments, consisting of motors, generators, battery and magneto ignition units and the appurtenances. In the generator line there are four types designed to meet the requirements of any manufacturer. These are all Ward-Leonard instruments weighing respectively 10, 15, 24 and 18 lb., and having capacities of 8 amp. for the 10-lb. instrument and 10 amp. for the others. The Ward-Leonard system of control is used with each.

Two types of starting motors are manufactured, each being four-pole series wound units, and are built for both 12-volt and 6-volt systems. The starting torques are 16 ft.-lb. for the 6-volt and 24 ft.-lb. for the 12-volt on the smaller unit, and on the larger 27 ft.-lb. for the 6-volt and 42 ft.-lb. for the 12-volt. The W-H battery ignition set consists of an interrupter, a spark coil and condenser, distributer and switch. A feature of the breaker mechanism, which is a simple cam-operated type, is that it is lubricated by a felt roller which keeps the internal friction at a minimum.

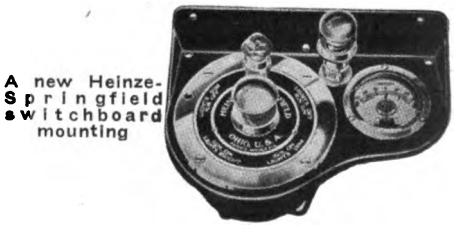
The magnetos are made in two styles, the W-H and the Volta. The W-H is a two-spark per revolution type of high tension instrument with the distributer self-contained. The Volta is a distinctive type with waterproof qualities. The condenser is mounted in a sealed box on top of the pole pieces, the armature is dust and waterproof. The high-tension collector ring is directly under the distributer, giving a short, direct, waterproof connection. Thin plate batteries for use with the ignition, starting and lighting systems are shown, together with a line of switches, meters, cables, etc.—Wagner-Hoyt Electric Co., New York.



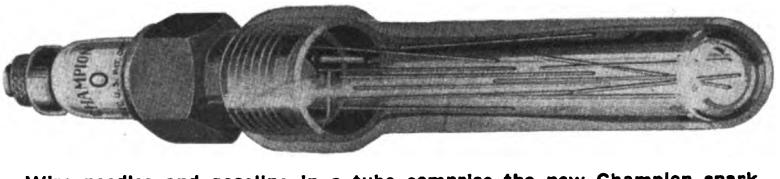
The Wagner-Hoyt electrical equipment is exceptionally complete, and well made



The twin Aitchandee shock absorber has, as the name implies, double leverage arms and springs



A new Heinze-Springfield switchboard mounting



Wire needles and gasoline in a tube comprise the new Champion spark plug cleaner

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Personal Touch Best For Business Building

Johnson Likes the Prospect to Feel that he is Being Speken to Personally—His Methods

ST. LOUIS, Jan. 9—A. L. Johnson, of the Johnson Automobile Co., a new Ford dealer at 3667 Olive Street, is working out a double problem.

FIRST—He is building up his service department by gaining as customers a fair proportion of those who formerly patronized the Ford branch's assembly plant.

SECOND—He is seeking to develop a winter business that will cause his service department to show gains steadily during the winter season.

Despite the fact that the Johnson company handles only accessories for Ford cars, the account is rated as one of the best in the city by those concerns which sell the accessories he uses.

"I am a firm believer in the personal touch in the accessory and service business," said Johnson. "General advertising, like that in a newspaper, is all right for cars, but for service I like the prospect to feel that he is being spoken to directly.

"After the Ford assembly plant closed its service department and while we were building up our service equipment we were busy. But when the cold weather came and some cars stopped running and others did not run as much, I picked a solicitor and mapped out for him what territory I considered our own, that from which we should have practically all of the business.

"This man is instructed to call on all the business houses owning Fords first, then to take up the owners of pleasure cars in this district. He is to assure them that our service is as near perfect as human hands and minds can make it; also that we feel a direct interest in all cars coming here.

"We find the same personal touch best in selling accesories. When the owner drives into our station we speak to him concerning some accessory. We do not urge him to buy. The discussion is impersonal. We merely discuss the advantages of speedometers, of starters and of other things that can be attached to a Ford to give satisfaction in its use.

"Of course, we never admit that a Ford is not complete as it is sold, nor do we ever urge the purchase. We find it better to talk of these things in a purely professional, fellow-interest way. The car owner is disarmed and buys without an invitation.

"We do not display our accessories so that car customers see them. This is afterward. But it is seldom that a buyer leaves without a speedometer, and we never offer anything but NATIONALLY ADVERTISED ARTICLES.

"When some people began leaving their cars in the garages we contracted with a moving picture advertising concern to run our ads in the movie circuit.

"Of course our heaviest sales of accessories are to persons who had planned to buy a more expensive car than the Ford and who then want to spend as much money as the other car would cost. To-day we had such a customer, and he spent $175 extra before he left the shop. He asked for everything."

Make Friends of Prospects

DENVER, Jan. 9—"It pays to make every visitor to your place of business glad he came in, whether or not you sell him anything or ever hope to."

So says P. E. Chamberlain, Denver, general manager of the Chamberlain-Woods Motor Sales Co., Hupmobile, Dort and Locomobile distributor for Colorado and adjacent territory. "It's human nature to want to be appreciated, and it's good business to make people feel that your interest in them doesn't necessarily center in their pocketbook. Every man in our organization has that principle impressed upon him, and this idea is responsible for a welcome and appreciation card we mail to every salesroom visitor, thanking him for his call and telling him we hope he will come in again. I believe that this makes the average person feel that we are treating him as an acquaintance and an individual rather than merely a 'prospect.'"

A Successful Salesman Must Have Originality

Portland Trade Association Hears Jaeger Talk on the Future of the Salesman—Cars Sold, not Bought

PORTLAND, ORE., Jan. 6—Eighty-seven salesmen, representing the Portland retail automobile trade, listened to able speakers, who analyzed the trend of the automobile business at a banquet given at the Multnomah Hotel last week.

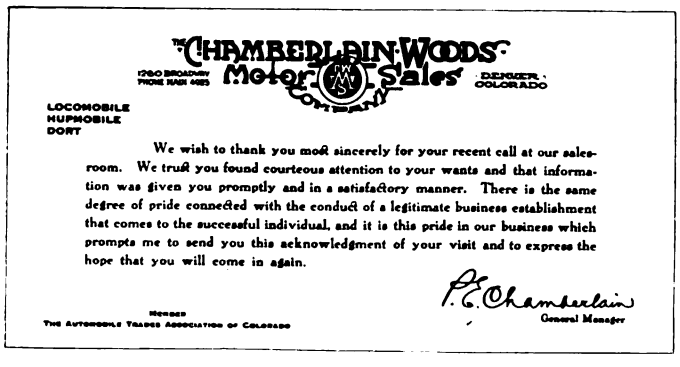
The speakers were A. H. Brown, former manager of the Studebaker northwest branch, and J. F. Jaeger, president of the Greater Portland Association.

Brown's talk was a plea for originality, resourcefulness and a closer study of conditions on the part of the salesman. He outlined the four points of making a sale as attention, interest, desire and action. That the day when automobiles will have to be sold instead of bought is coming faster than many suppose is the prediction of Brown, who said:

"For many years it has been merely a question of getting cars to sell them. The demand for a good car has always been greatly in excess of the supply, but with half a million a year being turned out and the big makers forcing every end to meet the demand, the point when competition will really force salesmanship will be at hand shortly.

"At that time it will be the original and resourceful man who will sell his goods, just as in every other line of business. Every prospect, no matter how slim the chance of selling him, is worthy of your complete attention and enthusiasm."

Jaeger attacked the "knocker." He advised the motor car salesman first of all to know his product, to know that it is the best thing of the kind to be had, and to impress the customer with the fact that the salesman knows it to be the best thing to be had. If you have not confidence in the car you sell get in with a make in which you have confidence. Go out of your way to give service, and make the people believe that it is a pleasure for you to do so.


THE CHAMBERLAIN-WOODS Motor Sales Co.
1760 BROADWAY PHONE MAIN 4625 DENVER, COLORADO
LOCOMOBILE HUPMOBILE DORT

We wish to thank you most sincerely for your recent call at our salesroom. We trust you found courteous attention to your wants and that information was given you promptly and in a satisfactory manner. There is the same degree of pride connected with the conduct of a legitimate business establishment that comes to the successful individual, and it is this pride in our business which prompts me to send you this acknowledgment of your visit and to express the hope that you will come in again.

P. E. Chamberlain
General Manager

Member
THE AUTOMOBILE TRADES ASSOCIATION OF COLORADO

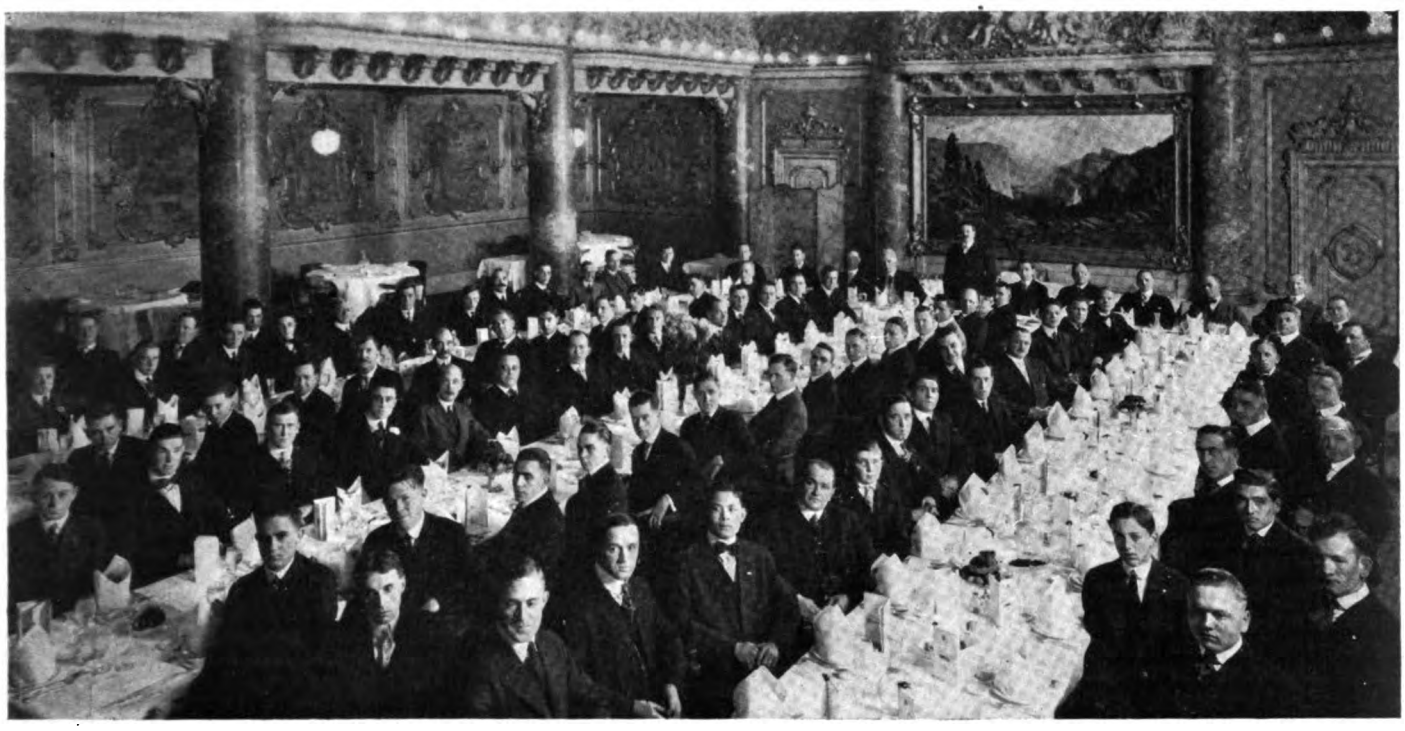
Soon after a prospect has visited the Chamberlain-Woods salesroom he receives one of these cards. It is simple courtesy and it pays dividends.

Better Mechanics

Read Pages 56 to 58

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Kissel Men on Coast Dine Together Christmas



All the members of the organization of the San Francisco branch of the Kissel Motor Car Co. celebrated a prosperous 1916 by eating together December 22. Note the youthful faces and the almost entire absence of moustaches

Henshaw Pillories Bad Sales Types at Dinner

Awards Prizes to Men in Novel Program—Offers Dodge Prize to Whole United States

BOSTON, Jan. 8—An original and novel application of salesmanship was exploited here to-night by C. S. Henshaw, the Dodge distributer in eastern Massachusetts, at a dinner when he awarded prizes to the men in his organization for selling cars.

The dinner was held at the Boston City Club. The honor guest was George S. Hubbs, assistant sales manager of the Dodge Bros. factory. Henshaw surprised his gathering of some seventy-five people when he began to illustrate methods of salesmanship.

First there appeared a lad with a snare drum. He rattled off a loud tattoo, and then a placard appeared on which were the following lines:

Burrackity-Burr and Burr-ack-et-ack-Tack!
He rolls out the racket with never a slack.
He rattles his "prospect" by too much tattoo;
Beats it in, beats it out—and the checks don't come through.

Next a phonograph was introduced and a tune was played that had real harmony and melody. Then a placard was hung up and the diners read:

Here we have the letter-perfect salesman, able to phrase every familiar note quite correctly and in a way to win many. But if a hearer does not happen to fancy this phonographic stuff, this salesman can't improvise any other tune that will catch and hold attention and interest.

The third illustration was an Italian, unshaven, unkempt, with a hand organ and a monkey. He ground out a squeaky old tune, and a placard told everyone that

He grinds away the livelong day,
On tunes that now are somewhat rusty.
His coat is worn, his face unshorn,
His general aspect's pretty musty.
His lagging step shows lack of "pep,"
He always has to have assistance;
He's lost his punch and plays his hunch
Along the line of least resistance.

Next a soloist came out and sang a very pleasing song, and the placard hung up stated that

His sales-story is suited to the occasion and the mood of his hearers; now gay and spirited, again deep and earnest. Each phrase is nicely modulated, each contributes its planned part to a winning effect—and his repertoire contains not only classics, but the best lyrics of the hour—and encores as called for.

Finally there came the Boston Male Quartet, and as it sang a card said:

"This is the harmony of our organization."

Hubbs was then introduced and he awarded the prizes. He paid a high tribute to the Henshaw organization as a leader in the selling of Dodge Bros. cars.

A paper called The Boston Leader, four pages, was handed out with a lot of good things about selling, advice to the men and inspiration in verse, etc. In it was an announcement that Henshaw had offered a diamond medal to the Dodge Bros. salesman in any part of the world who sold the largest number of cars for 1917.

The contest had been under way since early in November and ended Jan. 1. The winners were:

New Car Division

W. L. Shepard	293.75	percentage miles
H. C. Henderson	218.22	" "
C. M. Whelden	183.33	" "

Branch Division

C. A. Galloupe	166.66	percentage miles
C. F. Mussey	157.14	" "

Used Car Division

J. W. Weeder	185.00	percentage miles
J. S. Murray	153.57	"

Likes Better Mechanics Dept.

Editor Motor World: Enclosed please find money order for $2 for renewal of subscription to Motor World.

Your paper has been satisfactory during this year, and I am looking forward with pleasant anticipation to the valuable articles which have been promised for the year 1917.

I am especially interested in the new Service Department that you are going to have, and it clearly shows that you are alive to the wants of your readers and intend to continue to give something in return for their money.

I also would be pleased to have you send Motor World's Simplified System of Accounting.

Wishing you the greatest success for the year 1917—Wm. A. Roche, New York.

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Combine of Kansas City and St. Louis to Get Law

Two Big Cities Get Together on Issue Applying to Good Roads in Roadless Areas

KANSAS CITY, Jan. 6—The Kansas City Motor Car Dealers' Association through its legislative committee has completed arrangements for co-operating with the St. Louis Dealers' and Manufacturers' Association in an effort to secure the enactment of a law at the approaching session of the Missouri legislature providing for the use of convict labor on the State highways. The Kansas City association now has a membership of fifty-nine, an increase of eleven over 1915. During the year the association raised and expended approximately $7,000 for the promotion of good roads. During the year an investigation bureau was installed for the purpose of examining the qualifications of applicants for jobs with any of the members. Owing to Kansas City's rapidly growing importance as a distributing center for motor cars hundreds of men have been attracted to this city from all parts of the country in quest of employment with automobile concerns, and the bureau was established as a matter of self-protection.

Secretary E. E. Peake of the association states that the drawing of space in the forthcoming motor car show will be held Jan. 9. Already 250 exhibitors have applied for space, and the space to be occupied in the J. I. Case building will be 25 per cent greater than last year.

Lowe Employees Have Ball

NEW YORK, Jan. 6—The employees of the Lowe Motor Supplies Co. gave their first annual concert and ball at the Elsmere, 80 West 126th Street, last Saturday evening. Officers of the Lowe Social Circle are: President, J. W. Kleinfeld; vice-president, Isadore Goldenberg; secretary and treasurer, Louis J. Goldberg.

Seiss Horn Buys Factory

TOLEDO, Jan. 6—The Seiss Mfg. Co., this city, maker of the Seiss horn, has purchased a factory on Lake Shore Avenue with 52,000 sq. ft. of space. The new building affords an expansion of about triple the present space. Business will be transferred to the new building about Feb. 1.

Displays of Three Cars Only

COLUMBUS, Jan. 8—Drawings for space at what promises to be the greatest show ever staged in central Ohio, Jan. 27 to Feb. 3, at Memorial Hall, were held by W. H. Payne, manager of the Columbus show. Because of the great demand for space it has been found necessary to place a limit on dealers to displays of three cars each.

PATHFINDER AND EMPIRE ARE MERGED

INDIANAPOLIS, Jan. 9—The Pathfinder and Empire automobile companies have been merged into a $5,000,000 corporation with added capital which will permit a greatly increased production. The respective names of the cars will be retained, and it is probable that the Pathfinder organization will have a paramount part in the new company.

The entire plan is not perfected in all its details. The financing is being handled by Boughton & Co., 120 Broadway, New York, bankers. It is understood that considerable Indianapolis capital is back of the consolidation.

The Pathfinder Co. last year built 1000 cars, and under the new plan will turn out 2000. The output of the Empire Automobile Co. also will be increased.

The Pathfinder was originally the Motor Car Mfg. Co., but reorganized several years ago and increased its capital to $250,000, where it stood before the merger.

The Salesmen Eat

ST. LOUIS, Jan. 9—Two challenges to local sales forces with a dinner as a reward for special sales records were won by the salesmen here during the last half of December.

The sales force of the Weber Motor Car Co., dined at the Missouri Athletic Association Thursday night as the guests of the Sales Manager, F. E. Wright. According to Mr. Wright, the force had made an exceptional record for the first half of the month of December and at the mid-month meeting he offered the dinner if they kept up the pace until Jan. 1. "The boys came through with 18 retail sales of Studebaker cars for the last half of the month," he says, "and the dinner was theirs."

The sales force of the Weber Implement & Automobile Co. is dining to-night at the Mercantile Club, the guests of George Weber, president of the company. At the mid-Decemeber sales meeting Weber challenged the force to sell 200 cars during December. They sold 207, wholesale and retail. Hupmobile, Maxwell and Grant cars are handled.

Northwestern Garages Asking Cash Repairing

Sending Out Letters to Effect That Present Rates Mean Loss to Proprietor

MINNEAPOLIS, Jan. 5—Repairshops are sending out notices of advance in prices Jan. 1, or that they will go on a cash basis. The Northwestern Automobile Co. sample notice reads:

Dear Sir: We desire to announce that on and after Jan. 1, 1917, our repair department will be conducted on a strictly cash basis.

Existing conditions have made this action absolutely necessary. The repairing of motor cars is essentially a cash business, because the elements that go to make up a complete job are cash items—labor, parts, and material must be paid for promptly.

You will perhaps be surprised to learn that we lose money on every hour's labor charged at 90 cents. Every shop is compelled to employ so much unproductive labor, such as superintendent, assistant superintendent, garage foreman, night man, porter, testers, shop and job clerks, etc., etc. This labor we can make no charge for whatever. In addition to this expense is the overhead, consisting of rent, light, heat, water, taxes, depreciation of machinery and equipment, etc. Therefore, after charging for the productive labor, and adding to the cost of same the cost of unproductive labor and dead expense, we find that every hour's labor is costing us about $1.10. You will therefore appreciate the necessity of curtailing this loss in every way possible, without affecting the efficiency of the shop, and this can be done only by getting cash for the work, and thereby eliminating the expense of billing, bookkeeping and collecting.

It is our desire to thoroughly satisfy our customers, and any complaint will receive prompt and courteous consideration. We regret that it is utterly impossible to secure 100 per cent efficiency from any corps of mechanics, but we are doing our best to improve the standard of our work; and we believe that a cash system will eliminate all undesirable accounts and enable us to serve better and more promptly our regular customers. Yours very truly,

Northwestern Automobile Co.
By Wm. Eggleston, Vice-Pres.

Briscoe to Build in Kansas City

KANSAS CITY, MO., Jan. 6—The Briscoe Motor Co. is planning to erect a new assembling plant here at an estimated cost of $300,000. It is expected that the plant will be ready for business before fall, and when completed this city will be the distributing point for Missouri, Iowa, Nebraska, Kansas, Oklahoma and Texas.

Frisco Closes "Salon de Luxe"

SAN FRANCISCO, Jan. 6—The second annual automobile salon de luxe, staged at the Palace Hotel, under the management of Ivan R. Gates, came to a successful close last week. Conservative estimates place the attendance at over 75,000 for the three days, and 15 sales were closed at the show. Several accessory firms exhibited.

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Electric Car Is Taking Firmer Hold in Kansas

Agencies Are Being Established in Country Towns and Sales Are Monthly Going Higher

KANSAS CITY, MO., Jan. 6—During the year 1916 it has been found by Kansas City dealers and distributers that the electric car is being rapidly adopted. Local distributers declare that the demand from the smaller towns of this territory has greatly increased, many business men in towns where there are less than two squares of paved streets having bought cars during that time.

A. D. Moore, manager of the Kansas City branch of the Ohio Electric Car Company, covering the Southwestern territory, states that 1916 has been the best in the history of the local electric car business. The local office became a factory branch one year ago, its territory including Missouri, Kansas, Oklahoma, Arkansas, Texas, Louisiana and the western half of Tennessee, and during that period 35 agencies have been established in the larger cities of those States. It is planned during the forthcoming year to establish additional agencies in the smaller towns throughout the territory, as this type of car is meeting with ready sale in cities of 1500 and up.

The Kansas City branch has handled between 400 and 500 cars during the year and has transacted a volume of business approximating $900,000. Three salesmen are being used at present to handle the Kansas City trade, and three more will be added in January.

A. T. Clark, Southwestern district manager of the Anderson Electric Car Company, which distributes the Detroit electric in seven States, says that the fiscal year of the local company, which ended July 31, showed an increase of business over the previous year of 241 per cent. Aug. 1, 1916, to Dec. 27 showed an increase over the same period of last year of 100 per cent. Many Detroit electrics are being sold in small towns, among them being Junction City, Ft. Scott, Manhattan and Arkansas City, Kan., and Carthage, Columbia, Moberly and Monroe City, Mo.

The company has 59 employees and operates two sub branches, at Memphis, Tenn., and Omaha, Neb. The Memphis branch was opened in May and the Omaha branch began operations Nov. 20 in charge of E. M. Bottom and five salesmen sent there from the Kansas City office. That office has already sold nine cars. Five salesmen are employed in the Kansas City branch and six road men work out of here.

Receiver for Pullman

YORK, PA., Jan. 5—A temporary receivership has been appointed for the Pullman Motor Car Co. and the affairs of the concern are now being looked after by W. A. Keyworth, Henry D. Schmidt and Carlton L. Hoff. Officials of the company claim that the receivership was made necessary because of the heavy purchase of raw material in anticipation of future requirements. By the decree of the court in appointing the three receivers a complete inventory was ordered, which is now being taken. It is purposed to resume operations in full in the plant next Thursday.

Detroit Amalgamation Progressing

DETROIT, Jan. 6—The meeting of the Detroit trade Wednesday evening for the purpose of forming a general association of the trade was attended by about 50 representatives. On account of the time necessary for the choosing of delegates from the different trades the final settlement of the matter has been postponed until a meeting Jan. 17 at the Wolverine Automobile Club.

Hearings on Stephens Bill

WASHINGTON, D. C., Jan. 6—The rooms of the House Committee on Interstate and Foreign Commerce were again crowded to-day with friends and opponents of the Stephens bill to standardize prices on trade-marked goods. Before adjourning for the day the Committee voted to continue the hearing of opponents on Monday, and afterward to hear friends of the measure in rebuttal.

Inter-State Prices Up

NEW YORK, Jan. 6—The Inter-State Motor Co., Muncie, Ind., increased its prices on Jan. 1 as follows: TR roadster, $850 to $875; five-passenger touring car, $850 to $925; divided front seat model, $895 to $940, and the five-passenger roadster, $895 to $950. This company also has a delivery car at $850 and a touring sedan at $1,325.

Chalmers to Raise Price

DETROIT, Jan. 8—The Chalmers Motor Co., this city, will raise its prices March 1 on the five-passenger 6-30 and the two-passenger roadster $160 and $180 respectively. The former model sells at $1,090 and the roadster at $1,070.

Haynes Raises Car Prices

KOKOMO, IND., Jan. 6—The Haynes Automobile Co., this city, will increase the prices on all four of its models Feb. 1. Model 36, the six on the 121-in. chassis, and model 40, the twelve on the same chassis, will be increased $110, and model 37, the six on the 127-in. chassis, and model 41, the twelve on the same chassis, will be $140 higher.

Why Holiday Week Only?

MILWAUKEE, Jan. 6—During the recent Christmas buying season the Ora Hatch Drug Co., Bloomington, Wis., experimented successfully with a new trade-extension scheme by offering free garage service to all customers while doing Christmas shopping in Bloomington. Cars were kept in the heated garage of the Hillery & Knapp Auto Co. at Bloomington at the expense of the Hatch company.

$1,000,000 a Week for 1916 Cars in Bear State

California's Motor Car Business One-Third Better Than 1915 —Sales Total 60,000

LOS ANGELES, Jan. 6—California spent an average of more than $1,000,000 each week during 1916 for new motor cars. The increase over the preceding year was approximately one-third. Statisticians specializing in this line of endeavor computed the figures.

Final registrations for the year, of course, are not all in, but a week before New Year's the computations were prepared. The figures used were unofficial for the last 2 weeks of December, but the other 50 weeks of the year were accounted for from the records. The total amount paid out for new machines exceeded $60,000,000.

At the close of 1915 there were 48,769 motor cars in Los Angeles County and Dec. 1, 1916, there were 64,193. In the city of Los Angeles 1915 closed with 35,282 cars, but the middle of December, 1916, showed 42,316. Of the 60,000 new machines bought during the past year, 60 per cent were credited to southern California, of which Los Angeles County took nearly one-half.

The month of January, when the sales in the East are few and far between, led the entire year in California. Final figures for December probably will show it to have been the poorest buying month. However, the increase in price effective Jan. 1, 1917, on so many cars stimulated purchase at a time when the sale otherwise would have been less. Prospective buyers customarily hold off during December, because they do not care to buy licenses that are good for a few days only. Seven of the 1916 months saw more thn 5000 new cars put into service in this State. April was next to January, with June third.

Overland Sold 150,000 Cars

TOLEDO, Jan. 8—The Willys-Overland Co., this city, reports 1916 as the biggest year in its history. Approximately 150,000 Overland and Willys-Knight cars were sold, a net gain of better than 40 per cent over 1915. The net assets are more than $68,000,000.

Goodrich Business $73,000,000

AKRON, Jan. 8—Sales of the B. F. Goodrich Co., this city, for 1916 increased more than 30 per cent over 1915. Inasmuch as sales for the 12 months ended Dec. 31, 1915, were approximately $56,000,000, this means a gross in the year just ended of at least $73,000,000.

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Milwaukee Again Comes Through with Big Show

Is Mammoth Spectacle and Is Getting Business for the Dealers —Fashion Show a Feature

MILWAUKEE, Jan. 6—As a spectacle and as a business proposition Milwaukee's ninth motor show, which opened last night in the Auditorium, is by far the greatest success of any of the expositions held here. The opening night's attendance was 5700, which is about 750 more than were present on the opening night at the 1916 show, which was held at approximately the same time. The Milwaukee Automobile Dealers, Inc., which is responsible for the show, has succeeded in putting on an exposition which would do credit to the metropolis.

By actual count there are 301 pleasure cars and 76 motor trucks on exhibition. To accommodate this swarm of cars the M. A. D. has pressed into service every available inch of space in the mammoth Auditorium, covering a solid block. Hallways and corridors even are utilized. The entire decorative scheme is that of a Gothic garden, with garlands of Japanese wisteria and Alabama smilax.

This year's show is in charge of Bart J. Ruddle, who has handled seven of the Milwaukee shows for the M. A. D.

Every afternoon at 3 and every night at 8.30 o'clock there is a style parade in the main hall on a stage 10 x 40 ft. set in the center of the arena. By arrangement with the Gerretson Co., Milwaukee, a dozen models from the big women's-wear houses of Chicago and New York appear twice daily in the latest fashions for motoring, the ballroom and the drawing room. This is a new feature at the Milwaukee show.

Plankinton Hall, on the second floor of the Auditorium, has been transformed into a movie theater, and continuous performances are given of reels showing the operation of several well-known motor car factories. One brass band and four orchestras are distributed about the building.

Another Denver Dance

DENVER, Col. Jan. 8—In spite of numerous dances and other holiday social events in Denver at the same time, as well as icy roads for the trip and other detracting influences, 125 enthusiasts drove 34 miles to Boulder last Saturday night to attend the third out-of-town dinner and dance on the program planned by the winter-motoring committee of the Automobile Trades Association of Colorado, Denver Motor Club and Denver Civic & Commercial Association.

The affair was held in the Boulderado Hotel. While not in the mountains, Boulder is located at the edge of the foothills, and this trip demonstrated favorable road conditions in view of heavy snow and unusually severe weather during the last few weeks. Many motorists outside of those taking part in these special trips are showing greater interest in winter driving in general, and are thus gaining better appreciation of their cars and of Colorado's climate and roads, and are also helping to make more business for all branches of the automobile industry in this territory.

Gas Goes Up

NEW YORK, Jan. 9—Gasoline prices continue to rise, the increases ranging from 1 to 2 cents. Reports from Minnesota, Colorado, Illinois and Missouri this week show new records in gasoline prices for those sections. A report from Bloomington, Ill., states that this fuel is now selling at 18½ cents, a rise of 1 cent and the highest price in a year. The second 1-cent rise in the past 2 months has occurred in Kansas City, where the Standard Oil stations are selling at 17 4/5. Denver has been subjected to two 1-cent increases within a week, which have sent the retail price of gasoline to 23 cents and a prediction of a further rise in the next 10 days. Gasoline in the Twin Cities and Duluth has advanced to 19½. This is the third advance of 1 cent since Dec. 1.

Knox Has Truck Unit

SPRINGFIELD, MASS., Jan. 8—The Knox Motor Associates has developed, in addition to a 10-ton tractor, a unit that may be used with a touring car and for a tractor capable of hauling 2 to 3 tons. This unit, which sells for $550, is composed of an internal-gear-drive rear axle, the trailer platform and necessary connections, and takes the place of the rear axle and tonneau of the touring car.

As the Springfield Motors Co., just formed to build aviation motors for commercial, marine and aeroplane purposes, has contracted for the purchase of the local Knox plant, together with equipment, patents, etc., the Knox company will in the near future move to a near-by location. At present it is occupying a portion of the plant. The manufacture of the tractor will be carried on.

Larson Gets More Territory

NEW YORK, Jan. 8.—The Cutting-Larson Co., Olds distributer, has been given additional territory by the Olds Motor Works, making it one of the largest Olds distributers. The territory now includes most of Pennsylvania and all of Delaware, Maryland, Virginia and North Carolina.

Baltimore's Truck Men Found Selves at Fault

Discovered That Their Grievance Against Car Show Management Was Due to Own Omissions

BALTIMORE, Jan. 8—The movement by a group of truck dealers of Baltimore to form a Commercial Vehicle Association has gone astray after three unsuccessful meetings, but a great deal of good has come out of the gatherings. The real result of the meetings being that the dealers learned for the first time that the Baltimore Automobile Dealers Association was organized to do the very thing that the new association wanted to do, but had failed in many instances because of lack of support on the part of the dealers themselves.

Up to this time the work of the Dealers Association has been handled by a scant half dozen at most meetings, it being impossible to get the men together to do any work. The movement of the association that failed to form was for the purpose of holding a truck show and better to promote the interests of the truck dealers. A committee was appointed from the temporary association to confer with the show committee of the automobile dealers' association and they learned that the members of the old association were willing to do whatever the truck men wanted if they would give their support. The fact that there is no commercial show here this year is due to the failure of the truck men to vote for one when blanks for that purpose were sent out many months ago and that is the reason there is a strictly pleasure show this year.

The result of the conference is that all commercial dealers will hold exclusive shows in their showrooms and that buses will run from the armory at stated intervals to all of the showrooms. The committee also will provide men at the door, where there will be a chart of all commercial dealers to direct them to the truck dealers. The committee also announced that it is prepared to give a truck show the following week or at any time the commercial men would decide. The commercial men, in some instances favor a show in the Spring and this will be brought out later. The Fifth Regiment Armory is a large place, but it will not hold both truck and pleasure cars to advantage at the same time.

All of the truck dealers made a pact that they will inject new life into the dealers association and make it stand for more than merely holding the annual shows; it is to be a big business organization, in other words.

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Prominent Tradesmen Assume New Duties

Resignations and Promotions Place Workers in New Places

C. C. Bradford has resigned from the U. S. Light & Heat Corp., Niagara Falls, N. Y., of which he was for several years sales manager.

Frank J. Ryan, formerly in charge of western advertising for The Commercial Vehicle, has been appointed general sales director of the White Star Refining Co., Detroit.

Fred J. Van Sicklen, one time representative of the Class Journal Co. in western territory, has also joined the White Star organization. His duties will involve research and promotion.

John O. Heinze has joined the Simms Magneto Co., East Orange, N. J., as engineer and production manager. Heinze was recently with the John O. Heinze Co., Springfield, Ohio, maker of a starter for Fords, his invention. Prior to that he was a member of the Northway Motor & Mfg. Co., as chief engineer.

Malcolm E. Parrott has been made general manager of the three retail and wholesale car and accessory businesses of John Van Benschoten in Poughkeepsie, Newburgh and Kingston, N. Y. For the past four years he has managed the Newburgh branch and henceforth will be at the headquarters office in Poughkeepsie.

Arthur W. Robinson, formerly of Bridgeport, and now in London, England, has been promoted from director to the position of managing director of Gaston, Williams & Wigmore, Ltd., Alexandria House, Kingsway, London. Prior to this Robinson was truck sales manager and a director of the Locomobile Co. of America.

A. R. Giffin has been appointed production and general factory manager of the Kellogg Mfg. Co., Rochester, N. Y. He was formerly connected with the Studebaker Corp. and lately with the Timken Axle Co., Detroit.

C. B. Rose has been elected vice-president of the Velie Motors Corp., Moline, Ill., and will have charge of purchasing and production. **W. K. Kennedy** will be his assistant. **L. H. Hazard** has been elected chief engineer of the company.

C. A. Bonniwell, for the past 2 years assistant sales and advertising manager of the Auburn Automobile Co., Auburn, Ind., has resigned, effective Feb. 1.

W. J. Slater, formerly manager of the sales promotion department of the Firestone Tire & Rubber Co., is now special representative of the general sales department.

Walter M. Brand has been promoted to be manager of the Maxwell Motor Car Co. branch in New Orleans, La., and **J. P. Hadley,** who opened the branch and has been manager, has been promoted to manager of the wholesale department of the Atlanta branch.

D. A. Carson, until recently with the Mitchell-Lewis Co. at Atlanta, Ga., has been made Southern representative for the Chalmers Motor Co., with headquarters in Atlanta.

J. W. Barber, who has been with the Peerless Motor Car Co. for the past 8 years, has been appointed manager of retail sales for Cleveland.

F. E. Chamberlain, truck sales manager of the Packard Motor Car Co. of New York, has been promoted to the position of truck sales manager of the Packard Motor Car Co. of Detroit.

W. I. Brown has resigned as sales manager for the Scripps-Booth Co. to join the staff of the Harroun Motors Corp. Brown will assist J. J. Plath, director of merchandising, and R. Ward Macey, sales manager, until Spring, when he will become a Harroun distributor in a Middle West State.

Enger Ends His Life

CINCINNATI, OHIO, Jan. 4—F. J. Enger, president of the Enger Motor Car Co., this city, shot and killed himself in his office at the factory to-night. He was 58 years old.

Chairman Hurley Resigns

WASHINGTON, Jan. 4—Edward N. Hurley, Chairman of the Federal Trade Commission, resigned today to resume his business in Chicago, which, he told President Wilson, was suffering from his absence. The resignation was accepted, although the President will urge Mr. Hurley to change his mind. The Chairman expects to leave the commission Feb. 1; in that case Vice Chairman Harris automatically will succeed him.

Bowman Discontinues Retail

DETROIT, Jan. 9—Beginning Feb. 1, the E. A. Bowman Co., will discontinue its retail accessory business and will do nothing but a jobbing trade. The company states that it believes the time is approaching when the line between wholesale and retail will have to be finely drawn and a company do one thing or the other.

Here's a Worth-While Meeting.

COLUMBUS, Jan. 8.—The next meeting of the Columbus Automobile Trade Association will be held Jan. 15, when Marsh C. Tyndall, president of the Columbus Salesmanship Club, will be the principal speaker. He will take for his subject "Salesmanship as Applied to the Automobile Dealer and Garage Owner." At the same time the three special committees named at the last meeting to bring in schedules of cost on repair work, tire work and battery work will report. The committees have been instructed to collect data on the cost of doing various standard repairs and then all members will have material upon which to base their schedule of prices.

Korbel Enters Roland Agency

NEW YORK, Jan. 8—Edward F. Korbel, who has been press agent for the New York show for a number of years, has entered another field. He has been elected vice-president of the Roland Advertising Agency, 1790 Broadway, and will handle all motor car accounts. The new position will be in addition to his other work.

Winnipeg to Organize Whole Manitoba Trade

Meeting Is Called for February 13 When Great Curling Contest Is Big Attraction

WINNIPEG, Jan. 8—An effort will be made by the Winnipeg Motor Trades Association to organize the whole of the motor industry in Manitoba into one body under the title of the Manitoba Motor Trades Association.

In order to accomplish their aims the dealers have announced a provincial convention, to take place in Winnipeg Feb. 13, and have issued invitations to all motor trade representatives in Manitoba to attend the convention as the guests of the Winnipeg Association.

This is the week of the annual Bonspiel, or Great Curling Contest, which has been a feature in Winnipeg for the past 20 years, and the automobile and accessory dealers will make special displays at their show rooms to attract the out-of-town visitor. In many cases the decorations will be on an elaborate scale and factory representatives will be in attendance to help out the local dealers.

A special program has been laid out dealing with all subjects of interest to the motor trade, and speakers fully qualified to deal with the various subjects have been secured. The program follows:

Address of welcome, His Worship D. J. Dyson, Mayor of Winnipeg; Good Roads and Their Relation to the Motor Trade, Hon. T. H. Johnson, minister of public works, Manitoba, and A. C. Emmett, secretary, Manitoba Motor League; Business Ethics, Rev. J. W. Hindley; Garage Systems and Service Plans, Fred Sager, service manager, Gutta Percha and Rubber Co. of Canada; Salesmanship, J. R. Struthers, Sheldon Schools of Salesmanship; Legislation, F. J. C. Cox, chairman legislative committee, Winnipeg Automobile Club; Organization, general discussion and resolutions of organization of convention as Manitoba Motor Trades Association.

Officers elected for the 1917 season for the Winnipeg Motor Trades Association were: President, T. G. Breen, Breen Motor Co.; vice-president, D. J. Wright, Western Canada Motor Car Co.; honorary secretary, Michael Ert, Michael Ert, Ltd.; treasurer, F. Sager, Gutta Percha & Rubber Co.

Separate sections were formed to transact the ordinary business of the association, one taking in automobile dealers and garage owners and the other tire and accessory concerns. A. C. Emmett of the Manitoba Motor League has consented to act as active secretary for the association and will take charge of the campaign for the formation of the provincial body to replace the present association, which confines its attention solely to the city of Winnipeg.

Price of Majestic Is $1,650

NEW YORK, Jan. 8—The price of the Majestic car, produced by the Majestic Motor Co., 1790 Broadway, is $1,650, the new list having been established too late to be included in the issue of Dec. 27.

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Specifications of the Leading Cars

MOTOR WORLD GUIDE

Revisions Are Made in Table Every Week

Model	Motor	S. A. E.	Ignition	Carburetor	Starter	Clutch	Gearset	Wheelbase	Tires	Rims	2-Passenger	5-Passenger	7-Passenger	Coupe	Sedan	Limousine	Detachable Top
ABBOTT																	
6-44	6-3½x4½	25.3	Remy	Stmbg	Remy	DP	3	122	32x4	SS	1195	†1250	1195	1495	1820	....	....
ALLEN																	
Classic	4-3½x5	22.5	Wsths	Stmbg	Wsths	C	3	112	32x3½	SS	850	850	†850	1175	....	....	1195
AMERICAN-SIX																	
A	6-3 x5	21.6	G & D	Zenith	G & D	D	3	122	32x4	SS	....	1295	....	....	....	....	....
AMS-STERLING																	
17	4-3½x4½	15.6	Bosch	Stmbg	Bosch	DP	3	110	30x3½	SS	....	....	....	....	....	....	....
ANDERSON																	
Six-40	6-3½x4½	25.4	Wsths	Own	Wsths	DP	3	120	32x4	SS	1275	1250	*1250	....	....	....	....
APPERSON																	
6-17	6-3½x5	29.4	Remy	Rafld	Bijur	DP	3	130	34x4	SS	1750	....	1750	....	....	....	....
8-17	8-3½x5	31.2	Remy	Rafld	Bijur	DP	3	130	35x4½	SS	2000	....	2000	....	....	....	....
ARBENZ																	
	4-3½x5	16.9	Conn	Carter	Disco	C	3	108	30x3½	C	....	675	....	....	....	....	....
AUBURN																	
6-39	6-3½x5	23.4	Remy	Rafld	Remy	DP	3	120	34x4	SS	1145	1145	†1145	....	....	....	1320
6-44	6-3½x5½	29.4	Delco	Rafld	Delco	DP	3	131	35x4½	SS	....	†1535	1535	....	....	....	1785
AUSTIN																	
Hy-King	2-2⅞x	39.7	Delco	Stmbg	Delco	D	6	142½	34x4½	SS	3750	3750	3750	4550	4950	5250	....
BIDDLE																	
D	4-3½x5½	22.5	Dixie	Zenith	G & D	DP	4	122	32x4	QD	2300	2350	†2275	....	....	3800	3900
BOUR-DAVIS																	
17	6-3½x4½	25.3	G & D	Stmbg	G & D	DP	3	118	32x4	QD	....	1250	....	....	....	....	....
BREWSTER																	
	4-4x5½	25.6	Bosch	Zenith	U.S L.	C	3	125	34x4½	SS	†6500	....	....	....	7500	7700	....
BRISCOE																	
B4-24	4-3½x5½	16.3	Conn	Mayer	Splitdorf	C	3	105	30x3½	QD	695	695	†695	....	....	....	....
8-38	8-3 x3½	28.8	Remy	Zenith	Apleo	C	3	114	32x3½	QD	†985	985	....	....	....	....	....
4-38	4-3½x5½	18.9	Remy	Mayer	Apleo	C	3	114	32x3½	QD	†785	785	....	....	....	....	....
BRUNSWICK																	
	4-4½x5½	36.1	Bosch	Rafld	Wsths	...	3	...	....	..	....	....	1950	....	....	....	....
BUICK																	
D4 34																	
D 4-35	4-3½x4½	18.2	Delco	Marvel	Delco	C	3	106	31x4	C	660	675	....	....	....	....	....
6-44-45-46-47	6-3½x4½	25.3	Delco	Marvel	Delco	C	3	115	34x4	SS	1040	1070	‡1440	....	1835	....	....
CADILLAC																	
55	8-3½x5½	31.2	Delco	Own	Delco	D	3	{132 125}	36x4½	SS	†2340	2340	2340	2960	....	3760	2835
CASE																	
T-17	4-3½x6	21.0	Conn	Rafld	A-Lite	C	3	120	34x4	QD	†1190	....	1190	....	....	....	....
CHALMERS																	
6-30	6-3½x4½	25.4	Remy	Stmbg	Wsths	DP	3	{115 122}	32x4	SS	1070	1090	1350	1440	1850	2550	....
CHANDLER																	
17	6-3½x5	27.3	Bosch	Rafld	G & D	D	3	123	34x4	SS	†1395	....	1395	1995	1995	2895	1995
CHEVROLET																	
4-90	4-3½x4	21.7	Conn	Zenith	A-Lite	C	3	102	30x3½	C	490	490	....	....	....	....	....
F5-F2	4-3½x4	21.7	Conn	Zenith	A-Lite	C	3	112	32x3½	SS	860	860	....	....	....	....	....
D	8-3½x4	36.45	Conn	....	A-Lite	C	3	120	34x4	SS	1385	....	....	....	....	....	....
COLE																	
8-60	8-3½x4½	39.2	Delco	Stmbg	Delco	C	3	127	35x4½	SS	†1695	....	1695	....	2295	2295	2195
CROW-ELKHART																	
CE-35	4-3½x5	19.6	Conn	Zenith	Dyneto	DP	3	114	32x3½	SS	†825	795	....	....	....	....	995
DANIELS																	
8	8-3½x5	33.8	Wsths	Zenith	Wsths	D	3	127	34x4½	QDR	†2600	....	2800	....	....	4000	....
DAVIS																	
H & I	6-3½x4½	25.3	Delco	Stmbg	Delco	C	3	119	34x4	....	1195	1195	1195	1595	1795	....	1995
J	6-3½x5½	29.4	Delco	Stmbg	Delco	C	3	124	34x4½	....	....	1495	1495	....	....	....	....
DETROITER																	
6-45	6-3½x4½	25.3	Conn	Ball	A-Lite	D	3	119	33x4	SS	‡1195	1195	....	1373	....	....	1398
F	4-3½x4½	22.5	Dixie	Schebler	Dyneto	D	3	112	33x4	SS	....	985	....	....	....	....	....
DISPATCH																	
G	4-3½x5	22.5	Bosch	Rafld	U.S.L.	D	4	120	36x3½	....	1135	1210	....	1400	....	....	....
DIXIE FLYER																	
1917	4-3½x5	16.9	Conn	Carter	Dyneto	C	3	112	32x3½	SS	†795	795	....	....	....	....	....
DODGE BROTHERS																	
	4-3½x4½	24	Delco	Stewart	N.E.	D	3	114	32x3½	S	785	785	....	950	1185	....	980
DORRIS																	

Mode	Motor	S. A. E.	Ignition	Carburetor	Starter	Clutch	Gearset	Wheelbase	Tires	Rims	2-Passenger	5-Passenger	7-Passenger	Coupe	Sedan	Limousine	Detachable Top
LIBERTY																	
6	6-3½x4½	23.4	Delco	Rafld	Dole	DP	3	115	32x4		†1095	1095	....	....	1295	....	....
LOCOMOBILE																	
R-7	6-4½x5	43.3	Eisman	Ball	Wsths	DD	4	139	37x5	QDC	†4750	*4600	4600	....	....	5600	....
M-7	6-4½x5½	48.6	Eisman	Own	Wsths	DD	4	142	37x5	QDC	*5400	....	5400	....	....	6500	....
LOZIER																	
84	4-4½x6½	28.9	Bosch	Stewart	G & D	D	{4 2}	120	36x4½	SS	....	....	1695	....	....	....	....
82	6-3½x6	36.6	Eisman	Rafld	G & D	D	{3 2}	133	36x4½	SS	....	....	2775	....	....	....	....
LUVERNE																	
17	6-3½x5	33.7	Bosch	Schebler	Bosch	DD		132	35x4½	SS	....	....	1500	....	....	....	....
MADISON																	
4	6-3½x5	23.4	Remy	Rafld	Remy	DD	3	120	34x4	SS	....	....	....	....	....	....	....
	6-3½x5	23.4	Remy	Rafld	Remy	DD	3	115	34x4	SS	1050-1150	....	....	....	....	....	....
	6-3½x5	23.4	Remy	Rafld	Remy	DD	3	124	34x4	SS	†1150	{1150 1250}	1150-1250	....	....	....	....
MAIBOHM																	
A	4-3½x4	15.6	A.Kent	Zenith	Disco	DD	3	105	30x3½	SS	695	....	....	....	....	....	....
MAJESTIC																	
M	8-3x5	28.8	A.Kent	....	R & M	DP	3	125	32x4	....	†1500	1650	1650	....	....	....	....
A	8-3½x5	33.8	A.Kent	....	R & M	DP	3	135	35x5	....	†3000	3000	3000	....	....	....	....
MARION HANDLEY																	
6-40	6-3½x5	23 4	Wsths	Stmbg	Wsths	DD	3	120	32x4	SS	†1275	....	1275	....	....	....	....
6-60	6-3½x5½	29.4	Wsths	Stmbg	Wsths	DD	3	125	35x4½	SS	....	....	1475	....	....	....	....
MARMON																	
34	6-3½x5½	33.7	Bosch	Stmbg	Bosch	C	{3	136	34x4½	QD	†‡3100	3050	3100	....	4100	4500	....
MAXWELL																	
25	4-3½x4½	21.	Sims	K-D	A.Kent	C	3	103	30x3½	C	620	635	....	865	985	....	....
McFARLAN																	
	6-4½x6	48.6	Bosch	Stmbg	Wsths	DP	3	136	35x5	QDR	3750	3800	3800	....	....	....	....
MERCER																	
22-73	4-3½x6½	22.5	Bosch	Corser	U.S.L.	DD	4	122	34x4½	QDC	†3500	*3500	....	....	....	....	....
22-73	4-3½x6½	22.5	Bosch	Corser	U.S.L.	DD	4	115	32x4	QDC	3400	Raceabout, 3250	..	....	....	....	....
METZ																	
25	4-3½x4	24	Dixie	A.W.T.	G & D	F	..	108	32x3½	C	545	545	....	....	....	....	....
MITCHELL																	
D-40	6-3½x5	25.4	Conn	Rafld	plitdorf	C	3	120	32x4	SS	1050	1050	....	....	....	....	....
C-42	6-3½x5	29.4	Conn	Rafld	W ths	C	3	127	34x4	SS	‡1325	1325	1360	1850	1985	2650	....
MOLINE-KNIGHT																	
C	4-3½x5	22 5	Conn	Schebler	A-Lite	C	3	118	34x4	SS	†1450	1450	....	....	....	....	....
G	4-4 x6	25.6	Conn	Schebler	A-Lite	C	3	123	35x4½	SS	†1750	....	1840	2400	2250	....	....
MONARCH																	
	8-3 x5	28.8	A.Kent	Zenith	.. .	D	3	125	35x4½	....	....	1500	....	....	....	....	....
MONITOR																	
C-R	4-4½x4½	22.5	Heinze	Schebler	Heinze	D	3	108	32x3½	SS	795	795	....	....	....	....	....
N-O	6-3½x4½	25.4	Heinze	Stmbg	Heinze	D	3	115	33x4	SS	995	995	....	....	....	....	....
MONROE																	
M-3	4-3 x4½	14.4	Conn	Zenith	A Lite	DD	3	96	30x3	DC	565	....	....	....	965	....	....
M-4	4-3½x4½	16.9	Conn	Zenith	A-Lite	DD	3	115	32x4	DC	....	965	....	....	....	....	....
MOON																	
6-43	6-3½x4½	25.3	Delco	Rafld	Delco	DD	3	118	32x4	SS	‡1295	1295	....	....	....	....	1450
6-66	6-3½x5½	29.4	Delco	Rafld	Delco	DD	3	125	35x4½	SS	†1650	....	1650	1690	2250	....	....
MURRAY																	
70-T	8 3½x5	33.8	Dixie	Zenith	Wsths	DP	3	128	34x4½	..	2500	....	2500	....	....	Chassis	2000
NATIONAL																	
Hgy	6-3½x5½	29.4	Dixie	Rafld	Wsths	C	3	128	34x4½	QDR	†1750	....	1750	2400	2250	....	....
Hgy	12-2½x4½	39.68	Delco	Rafld	Bijur	C	3	128	34x4½	QDR	†2150	....	2150	2800	2750	....	....
NELSON	4-3½x4½	15.6	Bosch	Zenith	U.S.L.	D	3	104	32x4	SS	....	....	....	....	2200	....	....
OAKLAND																	
34	6-2½x4½	18.9	Delco	Marvel	Delco	C	3	112	32x4	SS	‡875	875	....	....	....	....	{985 1650}
50	8-3½x4½	30.2	Delco	Stmbg	Delco	C	3	127	34x4½	SS	....	....	1585	....	....	....	
OLDSMOBILE																	
45	8-2½x4½	26.4	Delco	Johnson	Delco	C	3	120	33x4	SS	1295	1295	....	....	1850	....	1775
OVERLAND																	
85-4	4-4½x4½	27.2	Conn	Titan	A-Lite	C	3	112	32x4	SS	835	850	....	1250	1450	....	....
85-6	6-3½x4½	25.3	Conn	Titan	A-Lite	C	3	116	32x4	SS	970	985	....	1385	1585	....	....
OWEN																	
M-25	6-3½x5½	29.4	Bosch	Zenith	O-M	OM	..	125	34x4½	SS	....	3150	....	3500	....	4400	....
O-36	6-3½x5½	33.7	Bosch	Zenith	O-M	OM	..	136	35x5	SS	‡3750	‡3750	3750	....	....	4800	....
PACKARD																	
2-35																	
2-25	12-3 x5	48.2	Bijur	Own	Bijur	DD	3	{135 136}	35x5	QDC	3050	3050	3050	4150	....	4450	....
PAIGE																	
6-36	6-3½x5	29.4	Remy	Rafld	G & D	D	3	125	35x4½	SS	1295	1295	1295	1695	1695	2295	1695

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DORT																		
9	4-3½x5	16.9	Conn	Carter	Wsths	C	3	105	30x3½	QDC	†695	695	....	....	1065	....	815
DREXEL																		
R-30-35	4-3½x5	19.6	Bosch	Stmbg	Bijur	C	3	112	33x4	....	855	855	....	....	....	....	....
	4-3½x5	19.6	Bosch	Stmbg	Bijur	D	3	118	34x4	.	†1485	....	1845	....	....	....	....
ELCAR																		
D.F.	4-3½x5	19.6	Deloo	Carter	Dyneto	DP	3	115	32x3½	SS	845	8.5	†845	....	....	....	....
ELGIN																		
—	6-3 x4½	21.6	Remy	Stmbg	Wagner	DP	3	116	33x4	....	†985	985	....	....	....	....	....
EMERSON																		
Four	4-3½x4	22.5	A.Kent	Kngstn	....	D	3	110	30x3½	C	....	395	....	....	....	....	....
EMPIRE																		
45	4-3½x5	24.0	A-Lite	Stmbg	A-Lite	C	3	116	33x4	SS	....	960	....	....	....	....	....
60-R	6-3½x4½	25.6	Conn	Stmbg	A-Lite	C	3	120	34x4	SS	†1145	....	....	....	1625	....	....
70	6-3½x4½	25.6	Conn	Stmbg	A-Lite	DP	3	120	34x4	SS	....	1235	....	....	....	....	....
ENGER																		
12	12-2½x3½	34.2	Wsths	Stmbg	Wsths	DP	3	116	32x4	SS	....	1295	....	....	....	....	....
FIAT																		
55	4-5½x6½	42.	Wsths	Zenith	Wsths	D	4	140	35x5	QDC	....	....	5500	....	....	6500	....
56	6-4½x6	46.6	Bosch	Own	Own	D	4	135	37x5	QDC	‡5350	5350	5380	....	....	....	....
FORD																		
T	4-3¾x4	22.5	Own	{Holly Kngstn	....	D	2	100	30x3½r	C	345	360	....	505	645	....	....
FOSTORIA																		
	4-3 x4½	14.4	Remy	Zenith	....	D	3	108	30x3½	C	....	695	....	....	....	....	....
FRANKLIN																		
9	6-3½x4	25.3	A.Kent	Own	Dyneto	D	3	115	32x4	SS	1800	1850	†1850	2650	2750	3000	....
F.R.P.																		
45-A	4-4½x6½	33.8	Bosch	Lngmre	Bosch	C	4	110	36x5r	C	7000	....	....	....	....	....	....
45-B	4-4½x6½	33.8	Bosch	Lngmre	Bosch	C	4	140	36x5r	SS	Chassis	7000	....	....	....	....	....
GLIDE																		
3-40	6-3½x5	23.4	Wsths	Rafld	Wsths	D	3	119	34x4	SS	....	1145	....	....	1325	....	....
GRANT																		
K	6-3 -½	21.6	Remy	Stmbg	Wagner	C	3	112	32x3½	....	‡825	825	....	1050	1000	....	....
HACKETT																		
Four	4-3½x4½	22.5	G & D	....	G & D	D	3	112	31x4	SS	‡888	888	....	....	....	....	....
H. A. L.																		
	12-2½x5	39.6	....	Stmbg	Wsths	DP	3	135	34x4½	SS	2600	†2600	2385	....	....	4500	3500
HALLADAY																		
S	6-3 x5	21.6	A-Lite	Stmbg	Wsths	D	3	118	33x4	SS	‡1185	1150	....	....	....	....	....
R	6-3½x5	22.0	Wsths	Stmbg	Wsths	D	3	122	34x4	SS	1385	1385	....	....	....	....	....
HARVARD																		
4-2T	4-3 x4½	14.4	....	Zenith	Wagner	C	3	100	28x3	QD	750	....	....	....	....	....	....
HAYNES																		
36	6-3½x5	29.4	Remy	Rafld	L-N	DP	3	121	34x4	SS	....	1485	....	....	2150	....	....
37	6-3½x5	29.4	Remy	Rafld	L-N	DP	3	127	35x4½	SS	†1585	....	1585	....	2250	....	....
40	12-2½x5	36.3	Deloo	Rafld	L-N	DP	3	121	34x4½	SS	....	1985	....	....	2650	....	....
41	12-2½x5	36.3	Deloo	Rafld	L-N	DP	3	127	34x4½	SS	†2685	....	2685	....	2750	....	....
HOLLIER																		
186	6-3 x4½	21.6	Remy	Stewart	A-C	C	3	116	32x3½	SS	....	895	....	....	....	....	....
178	8-3 x4½	28.8	A-Kent	Stewart	Apco	C	3	116	34x4	SS	†1185	1185	....	....	....	....	....
HUDSON																		
Super-6	6-3½x5	29.4	Deloo	Own	Deloo	D	3	125½	35x4½	SS	1650	....	1650	1950	2175	2925	....
HUPMOBILE																		
	4-3½x5½	22.5	A.Kent	Zenith	Wsths	D	3	119	34x4	SS	1185	1185	....	....	1735	....	....
N-U	4-3½x5½	22.5	A.Kent	Zenith	Wsths	D	3	134	35x4½	SS	....	....	1340	....	....	....	....
INTER-STATE																		
T	4-3½x5	19.6	Remy	Schebler	Remy	C	3	110	33x4	SS	850	850	†895	....	....	....	1250
JACKSON																		
349	8-3 x3½	28.8	A-Lite	Zenith	A-Lite	DP	3	118	34x4	SS	1295	1295	†1395	....	....	....	....
34-A	4-3½x5	19.6	Conn	Schebler	A-Lite	C	3	112	32x4	SS	....	985	....	....	....	....	....
348-A	8-2½x4½	26.4	Conn	Schebler	A-Lite	C	3	112	32x4	SS	....	1195	....	....	....	....	....
68-A	8-3½x4½	39.3	Conn	Schebler	A-Lite	C	3	124	34x4½	QD	....	....	1685	....	....	....	....
JEFFERY																		
Four	4-3½x5½	22.5	Dixie	Stmbg	Bijur	DP	3	116	34x4	SS	....	....	1095	....	1260	....	....
Six	6-3½x5½	29.4	Dixie	Rafld	Bijur	DP	3	125	34x4	SS	1335	....	1365	....	1530	....	....
JORDAN																		
Sixty	6-3½x5½	29.4	Bosch	Stmbg	Bijur	DD	3	127	35x4½	SS	1650	†1750	1650	2300	2350	3000	....
KING																		
E	8-3 x5	28.8	A.Kent	Ball	W.Lnrd	DP	3	120	34x4	SS	†1585	‡1585	1585	....	2150	....	....
KISSEL																		
642	6-3½x5½	31.54	Eismn	Stmbg	Own	DD	3	128	34x4	SS	....	1650	1850	....	2000	....	....
100-pt.	6-3½x5	25.3	Remy	Stmbg	Own	C	3	117	33x4	SS	†1195	1195	....	1635	1950	....	1635
KLINE																		
638	6-3½x4½	25.3	Wsths	Rafld	Wsths	DP	3	120	34x4	SS	1175	1195	†1195	....	....	....	....
LAUREL																		
35	4-3½x4½	33.8	Dixie	Scheb er	Disco	D	3	112	32x3½	QD	†895	850	885	....	....	....	....
LEXINGTON																		
6-O-17	6-3½x4½	25.4	Conn	Rafld	Wsths	DD	3	116	32x4	QD	†1185	1185	....	1350	1350	....	....
6-P	6-4½x5½	27.2	A.Kent	Stmbg	Wsths	C	3	144	36x4½	QD	†2675	....	2875	....	....	....	....
								132									
PARTIN-PALMER																		
20	4-3½x4½	15.6	Conn	Schebler	A-C	DD	3	96	30x3½	C	545	....	....	....	....	....	....
32	4-3½x5	19.6	Conn	Carter	Disco	DD	3	110	32x3½	C	....	695	....	....	....	....	....

*6-passenger. †4-passenger. ‡3-passenger.

PATERSON																		
6-45	6-3½x4½	25.4	Deloo	Stmbg	Deloo	C	3	117	32x4	C	†1095	1095	1095	....	....	....	..
PATHFINDER																		
2B-TC-2C12-2½x5		39.6	Deloo	Stmbg	Deco	DD	3	135	35x5	SS	....	....	3250	....	....	....	....
PEERLESS																		
56-2	8-3½x5	33.8	A.Kent	Special	G & D	DD	3	135	35x4½	SS	†1890	....	1890	2700	2750	3360	....
PHIANNA																		
M	4-3½x6	24.9	Bosch	H & N	WLnd	DD	4	...	32x4½	....	Chassis	....	3600	....	....	....	....
PIERCE-ARROW																		
38-C-4	6-4 x5½	38.4	Bosch	Own	Wsths	C	4	124	35x4½	QDC	4600	4600	†4600	5630	5670	....	....
48-B-4	6-4½x5½	48.6	Bosch	Own	Wsths	C	4	142	37x5	QDC	4900	4900	5000	6060	....	....	....
66-A-4	6-5 x7	60	Bosch	Own	Wsths	C	4	147½	38x5½	QDC	†5900	5900	6000	....	....	....	....
PILOT																		
6-45	6-3½x5	23.4	Deloo	Zenith	Deloo	DP	3	119	32x4	SS	†1150	1150	....	....	....	....	....
PREMIER																		
6-B	6-3½x5½	27.3	Deloo	Johnson	Deloo	DP	3	125½	33x4½	SS	†1895	....	1895	....	2960	3150	....
PRINCESS																		
4-36	4-3½x4½	22.5	Splitdorf	Schebler	Disco	D	3	108	32x3½	....	775	775	‡775	....	....	....	....
PULLMAN																		
424-32	4-3½x4½	22.5	Dixie	Stmbg	Splitdorf	D	3	114	31x4	SS	825	825	†825	....	....	....	....
REGAL																		
4-32	4-3½x4½	19.6	Heinse	Carter	Heinse	C	3	108	30x3½	DC	....	745	....	....	....	....	....
F	8-3 x4½	28.8	....	Johnson	Dyneto	C	3	115	33x4	SS	1300	....	....	....	....	....	....
REPUBLIC																		
E	6-4½x5	43.3	Deloo	Rafld	Deloo	C	4	133	36x4½	SS	....	†2950	2950	....	....	....	....
REO																		
M	6-3⅞x5½	30.4	Remy	Rafld	Remy	DD	3	126	34x4½	SS	....	†1250	1250	....	1730	....	....
R	4-4½x4½	27.2	Remy	Johnson	Remy	DD	3	115	34x4	SS	‡575	575	....	....	....	....	1630
RICHMOND																		
6-17	6-3½x5	29.4	Deloo	Stmbg	Deloo	C	3	124	35x4½	....	....	....	....	....	....	....	....
4-35	4-4 x4½	25.6	Dixie	Stmbg	Deloo	C	3	124	35x4½	....	900	900	985	....	....	....	....
ROAMER																		
R-A.	6-3½x5	23.4	Bosch	Stmbg	Bijur	D	3	127	34x4	SS	2150	1850	....	....	....	....	....
ROSS																		
C	8-3½x5	33.8	A.Kent	Zenith	W.Lnrd	DD	3	130	35x4½	SS	‡1550	†1550	1550	....	....	....	....
SAXON																		
B-5-R	4-2½x4	12.1	A.Kent	Rebh	Wagner	DD	3	96	30x3	DC	495	....	....	....	....	....	....
S-4	6-2½x4½	19.8	Remy	Rafld	Wagner	DD	3	113	32x3½	SS	....	855	....	....	....	....	....
SCRIPPS-BOOTH																		
D	8-2½x3½	22.0	Remy	Zenith	Wagner	DD	3	120	32x4	SS	†1285	....	....	....	....	....	1460
G	4-3½x4	24.5	Remy	Zenith	Remy	C	3	110	30x3½	C	935	....	....	1450	....	....	....
SIMPLEX																		
5	6-4½x6½	45.9	Eismn	Nwcmb	Bosch	D	4	143½	37x5r	QDC	Chassis	6060	....	....	....	....	....
SINGER																		
17	6-4 x5½	38.4	Bosch	Rafld	Wsths	DD	4	136	35x5	QD	3500	†3500	3900	....	....	4000	....
STANDARD																		
8	8-3½x5	38.8	Splitdorf	Zenith	Apple	D	3	127	35x4½	....	†1950	....	2000	....	....	3500	3500
STANLEY																		
Stmr	2-4 x6	....	....	....	....	..		130	34x4½	SS	‡2200	2200	2200	....	....	....	....
STEARNS																		
SKL4	4-3½x5½	22.5	Remy	Schebler	Wsths	DD	3	119	34x4	QDC	††1450	1450	....	2050	....	2900	2950
SK8	8-3½x5	33.8	Remy	Rafld	Wsths	DD	3	123	35x4½	QDC	†2150	....	2150	2900	....	3600	....
STEPHENS																		
60-65	6-3½x4½	25.3	Conn	Zenith	A-Lite	DD	3	115	32x4	....	‡1150	1150	....	....	....	....	....
STEWART																		
T	6-3½x5	29.4	Bosch	Rafld	Wsths	D	3	127	34x4½	SS	†1950	....	1950	....	....	....	....
STUDEBAKER																		
SF-4-40	4-3½x5	24.2	Remy	Schebler	Wagner	C	3	112	34x4	SS	†930	....	940	....	....	....	1140
ED-6-50	6-3½x5	36.32	Remy	Schebler	Wagner	C	3	123	34x4	SS	‡1170	....	1180	1750	1760	2600	1260
STUTZ																		
R	4-4½x5½	36.1	Bosch	Stmbg	Remy	C	3	130	34x4½	SS	2275	†2550	*2550	....	....	....	....
SUN																		
17	6-3½x5	23.4	Remy	Rafld	Remy	DP	3	116	34x4	SS	†1145	1095	1145	....	1295	....	....
VELIE																		
28	6-3½x4½	25.3	Remy	Stmbg	Remy	DP	3	115	32x4	SS	1115	1135	†1135	1750	1685	....	....
27	6-3½x5½	29.4	Remy	Stmbg	Remy	DP	4	124	35x4½	SS	....	....	1600	....	....	....	....
WESTCOTT																		{3190
S-17	6-3½x5½	29.4	Deloo	Rafld	Deloo	DD	3	125	35x4½	SS	1590	1590	1690	....	....	....	{3250
WHITE																		
GAH	4-3½x5½	22.5	Bosch	Own	Own	P	4	115	32x4	QDC	‡2650	2700	....	....	....	....	....
GED	4-4½x6	28.9	Bosch	Own	Own	P	4	132½	36x4½	QDC	3750	....	3800	....	....	....	....
16-Valve	4-4½x5½	28.9	....	Own	L.N.	P	4	137½	37x5	....	....	....	4600	....	....	....	....
WILLYS-KNIGHT																		
88-4	4-4½x4½	27.2	Conn	Tltsn	A-Lite	C	3	121	34x4½	SS	....	....	1285	....	1950	1960	....
WILLYS																		
88-6	6-3½x5½	29.4	Conn	Tltsn	A-Lite	C	3	125	35x4½	SS	....	....	1225	....	....	....	....
WINTON																		
33	6-3½x5½	33.7	Bosch	Rafld	Bijur	DD	4	128	36x4½	QD	2685	2685	2735	3600	3600	3600	....
48	6-4½x5½	48.6	Bosch	Rafld	Bijur	DD	4	138	37x5	QD	3500	3500	3500	4500	4750	4750	....
YALE																		
8	8-3½x4½	31.25	Remy	Rafld	Disco	DD	3	126	34x	....	....	....	1850	....	....	....	....

*6-passenger. †4-passenger; ‡3-passenger

ABBREVIATIONS—"G & D" Gray & Davis, "A-Lite" Auto-lite, "Wsths" Westinghouse, "Eismn" Eisemann "A.Kent" Atwater Kent, "Emrsn" Emerson, "Sevsn" Sevison, "Undec" Undecided, "Brlng" Berling, "Kngstn" Kingston, "Natnl" National, "W.Lnrd" Ward Leonard, "U S L" United States Lighting, "Conn" Connecticut, "Nwcmb" Newcomb, "N E" North East, "A-C" Allis-Chalmers, "L-N" Leece-Neville, "O M" Owen Magnetic, "B-Rshm" Bosch-Rushmore, "Mgnto" Magneto, "Tltsn" Tillottson, "Atzr" Atomizer, "Rebh" Reichenbach. Clutches: "C" Cone, "P" Plate, "DD" Dry Disk, "DP" Dry Plate, "D" Disk, "G" Gearless, "F" Friction. Rims: "Q D" Quick Detachable, "SS" Straight Side, "C" Clincher, "QDR" Quick Detachable Reversible, "QDC" Quick Detachable Clincher, "R & M" Robbins & Myers.

NOTE—The figures given in columns underneath 2-, 5- and 7-passenger, represent the list catalog prices of the models. Where a tire size is given, as for instance "37x5½r," it means that the rear tires are 27x5½ and the front are of smaller dimensions.

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Coming Events

Shows

Jan. 6-11—Milwaukee, Wis., Ninth Annual Show, Milwaukee Automobile Dealers, Milwaukee Auditorium.

Jan. 6-13—New York, Seventeenth Automobile Chamber of Commerce, Grand Central Palace.

Jan. 12-20—Philadelphia, Pa., Show, Philadelphia Automobile Trade Assn., Commercial Museum.

Jan. 15-17—Oakland, Cal., Second Annual Automobile Salon de Luxe, Oakland Hotel. Ivan R. Gates, Mgr.

Jan. 19 - 24 — Manchester, N. H., Show, Academy.

Jan. 20-27—Detroit, Mich., Sixteenth Annual Show, Detroit Automobile Dealers' Assn.

Jan. 20-27—Montreal, Can., Montreal Automobile Trade Assn.

Jan. 22-27—Rochester, N. Y., Ninth Annual Show, Rochester Automobile Trades Assn., Exposition Park.

Jan. 22-27—Buffalo, N. Y., Fifteenth Annual Broadway Auditorium, Buffalo Automobile Dealers' Assn.

Jan. 23-27—Lancaster, Pa., Western Market House, Lancaster Automobile Trade Assn.

Jan. 23-27—Baltimore, Md., Show, Fifth Regiment Armory.

Jan. 23-27—Allentown, Pa., Show, Lehigh Automobile Trade Assn. Peter Leisenring, Mgr.

Jan. 23-27—New Bedford, Mass., State Armory, Stephen W. Pierce, Mgr.

Jan. 24-27—Lewiston, Pa., First Annual.

Jan. 25-27—Asheville, N. C., Asheville Automobile Trade Association.

Jan. 27-Feb. 3—Richmond, Va., First Annual, Gray's Armory.

Jan. 27-Feb. 3—Chicago, Seventeenth Annual Show, Coliseum and First Regiment Armory.

Jan. 27-Feb. 3—Columbus, O., Fourth Annual Columbus Auto Show Co., Memorial Hall.

Jan. 27-Feb. 5—York, Pa., York Automobile Dealers' Association.

Jan. 28-Feb. 3—Wilmington, Del., Hotel Du Pont. J. H. Nixon, Mgr.

Jan. 29-Feb. 3—Buffalo, N. Y., Fifteenth Annual Show, Broadway Auditorium, Buffalo Automobile Dealers' Assn.

Feb. 3-10—Minneapolis, Minn., Twin Cities Automobile Show, Minneapolis Automobile Trade Assn.

Feb. 5-10—Bangor, Me., Show, Bangor Automobile Assn., Auditorium.

Feb. 7-10—Bay City, Mich., Automobile and Accessories, Armory. F. D. Shaver, Mgr.

Feb. 7-11—Kalamazoo, Mich., State Armory, Kalamazoo Automobile Dealers' Assn.

Feb. 10-17—Harrisburg, Pa., Harrisburg Automobile Dealers Assn.; J. Clyde Myton, Mgr.

Feb. 10-17—Hartford, Conn., Hartford Automobile Dealers' Assn., State Armory.

Feb. 10-18—San Francisco, Cal., Show, San Francisco Motor Car Dealers' Assn., Exposition Auditorium. G. A. Wahlgreen, Mgr.

Feb. 12-17—Louisville, Ky., Tenth Annual Show, First Regiment Armory, Louisville Automobile Dealers' Assn.

Feb. 12-17—Kansas City, Mo., Show, Kansas City Motor Car Dealers' Assn.

Feb. 12-19—Indianapolis, Ind., Indianapolis Automobile Trade Assn., Steinhart Bldg.

Feb. 14-17—Peoria, Ill., Show, Automobile and Accessory Dealers' Assn., Coliseum.

Feb. 17-24—Albany, N. Y., Sixth Annual, State Armory, Albany Automobile Dealers' Assn.

Feb. 17-24—Newark, N. J., Newark Automobile Dealers, First Regiment Armory, Claude E. Holgate, Mgr.

Feb. 19-24—Portland, Me., Exposition Building.

Feb. 19-24—South Bethlehem, Pa., Third Annual, Coliseum. J. L. Elliott, Mgr.

Feb. 19-24—St. Louis, Mo., Show, St. Louis Automobile Manufacturers' and Dealers' Assn., Overland Building.

Feb. 19-24—Bridgeport, Conn., Fourth Annual Show, State Armory. R. B. Steiber, Mgr.

Feb. 19-24—Duluth, Minn., Show, New Armory Building, Duluth Automobile Dealers' Assn.

Feb. 19-24—Syracuse, N. Y., Show, State Armory, Syracuse Automobile Dealers' Assn., H. T. Gardner, Mgr.

Feb. 19-24—Des Moines, Iowa, Eighth Annual Show, Des Moines Automobile Dealers' Assn. C. G. Van Vliet, Mgr.

Feb. 19-24—Grand Rapids, Mich., Eighth Annual Show, Automobile Business Association of Grand Rapids, Waters Building.

Feb. 19-24—Springfield, O., Memorial Hall, Springfield Automobile Trade Assn. C. S. Burke, Sec.

Feb. 24-March. 6—Brooklyn, N. Y., Sixth Annual, Brooklyn Motor Vehicle Dealers' Assn., Twenty-third Regiment Armory.

Feb. 26-March 3—Utica, N. Y., Utica Automobile Dealers' Assn., State Armory.

Feb. 26-March 3—Omaha, Neb., Twelfth Annual Show, Omaha Automobile Show Assn. Clarke G. Powell, Mgr.

March 1-3—Urbana, Ill., Show, Automobile Trade Assn. of Champaign County, Armory of the University of Illinois.

March 3-10—Boston, Mass., Fifteenth Annual Show, Boston Automobile Dealers' Assn. C. I. Campbell, Gen. Mgr.

March 6-10—Fort Dodge, Iowa, Sixth Annual Show, New Terminal Warehouse.

March 14-17—Davenport, Iowa, Show, Coliseum Building, Tri-City Automobile Trade Assn.

March 18-23—Cedar Rapids, Iowa, Show, Cedar Rapids Automobile Trade Assn.

April 4-7—Stockton, Cal., Second Annual, San Joaquin Auto Trades Assn. Samuel S. Cohn, Mgr.

Sept. 2-9—Spokane, Wash., Interstate Fair.

General Events

Jan. 6-13—New York, Mid-Winter Meeting of Society of Automobile Engineers, Engineering Society Building.

Jan. 9-10—Fort Dodge, Iowa, State Convention, Iowa Retail Automobile Dealers' Assn.

Jan. 10—New York, N. Y., Motor and Accessory Manufacturers, 33 West 42d St., Meetings—Executive Committee, Banquet Committee, Finance Committee, Board of Directors. Also Thirteenth Annual Meeting at 3 o'clock, and Ninth Annual Banquet at Waldorf at 7.30.

Jan. 11—New York, Motor and Accessory Manufacturers, 22 West 42d St. Meeting—Board of Directors.

Jan. 11—New York, Annual Banquet, Society of Automobile Engineers.

Jan. 24-26—Chicago, Second Annual Meeting National Association of Automobile Accessory Jobbers, Congress Hotel.

February—Convention Minnesota Retail Automobile Dealers' Assn.

Buffalo Show Outlook Good

BUFFALO, Jan. 8—Buffalo's fifteenth annual automobile show, which will be held in the Broadway Auditorium Jan. 22-27, inclusive, under the auspices of the Buffalo Automobile Dealers' Association, will eclipse all its predecessors in variety of exhibits and in originality and beauty of environment.

Mason B. Hatch is president of the association, whose other officers are E. G. Oliver, vice-president; Charles B. Kane, treasurer, and John J. Gibson, secretary. Directors are J. A. Kramer, A. W. Meyer and Charles F. Monroe. Executive Secretary Dai H. Lewis is supervising arrangements and will be manager of the show.

Salon in Oakland

OAKLAND, CAL., Jan. 8—San Francisco dealers who participated in the Automobile Salon at the Palace Hotel, San Francisco, in December, were so pleased with the results obtained that those who maintain branches in Oakland have induced Ivan R. Gates to stage a similar event at the Oakland Hotel. The Second Annual Automobile Salon de Luxe of Oakland will be held in the Ivory Ball Room of the Oakland Hotel on Jan. 15, 16 and 17, under the same management as the Palace show.

Bowser Employees Get Bonuses

DETROIT, Jan. 8—The S. F. Bowser company will give, on Jan. 10, to every employee whose salary is less than $2,000 yearly, a bonus of 12½ per cent of the entire salary for the year of 1916. The business for 1916 totaled more than $6,000,000, and the outlook for 1917 seems to be even greater.

Tractor in Durability Run

DETROIT, Jan. 8—A four-drive tractor is making a durability run through a number of Michigan towns, and to the present has given demonstrations at Rodney, Mecosta, Remus, Two Rivers, Mount Pleasant, Shepard, Ithaca and Alma. The trip will be finished at Saginaw during next week. Behind the tractor is a wagon carrying 2 tons of weight.

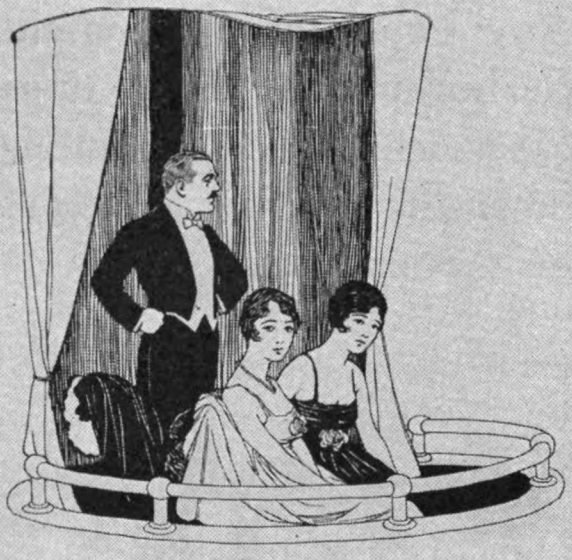
Motor Securities Quotations

	Jan. 6, 1917 Bid	Asked
Ajax Rubber Co.	72	73
J. I. Case T. M. Co., pfd.	86¼	89½
Chalmers Motor Co., com.	30	35
Chalmers Motor Co., pfd.	—	—
*Chandler Motor Car Co.	100	100½
Chevrolet Motor Co.	130	140
Fisher Body Corp.	39	41
Fisher Body Corp, pfd.	..	98
Fisk Rubber Co., com.	80	85
Fisk Rubber Co., 1st pfd.	110	115
Fisk Rubber Co., 2d pfd.	90	100
Firestone Tire & Rub. Co., com.	143	146
Firestone Tire & Rub. Co., pfd.	107	108
*General Motors Co., com.	650	
*General Motors Co., pfd.	120	125
*B. F. Goodrich Co., com.	58½	58½
*B. F. Goodrich Co., pfd.	111	112
Goodyear Tire & Rubber Co., com.	276	282
Goodyear Tire & Rubber Co., pfd.	107	108
Grant Motor Car Corp.	6	8
Hupp Motor Car Corp., com.	3¼	4
Hupp Motor Car Corp., pfd.	88	92
International Motor Co., com.	6	9
International Motor Co., pfd.	98	100
*Kelly-Springfield Tire Co., com.	61	63
*Kelly-Sp'gfield Tire Co., 1st pfd.	93	96
*Lee Rubber & Tire Corp.	23	26
*Maxwell Motor Co., com.	51½	52½
*Maxwell Motor Co., 1st pfd.	71½	72½
*Maxwell Motor Co., 2d pfd.	37	38
Miller Rubber Co., com.	248	252
Miller Rubber Co., pfd.	106	107
Packard Motor Car Co., com.	165	170
Packard Motor Car Co., pfd.	100	103
Paige-Detroit Motor Car Co.	39½	40½
Peerless Truck & Motor Corp.	16	20
Portage Rubber Co., com.	173	177
Portage Rubber Co., pfd.	—	—
†Regal Motor Car Co., pfd.	25	—
Reo Motor Truck Co.	—	—
Reo Motor Car Co.	39⅝	39⅞
Saxon Motor Car Corp.	67	69
Springfield Body Corp., com.	78	82
Springfield Body Corp., pfd.	118	122
Standard Motor Construction Co..	5	6
Stewart-Warner Spd. Corp., com.	99	100
Stewart-Warner Spd. Corp., pfd.	—	—
*Studebaker Corp., com.	105½	106½
*Studebaker Corp., pfd.	—	—
Swinehart Tire & Rubber Co.	—	79
United Motors Corp.	47½	48¼
*U. S. Rubber Co., com.	62	63
*U. S. Rubber Co., pfd.	113	114
White Motor Co.	48½	49½
*Willys-Overland Co., com.	36	37

*At close. Listed N. Y. Stock Exchange.
†Par, $10; others, $100.

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National



Best Reserved Seats on Wheels

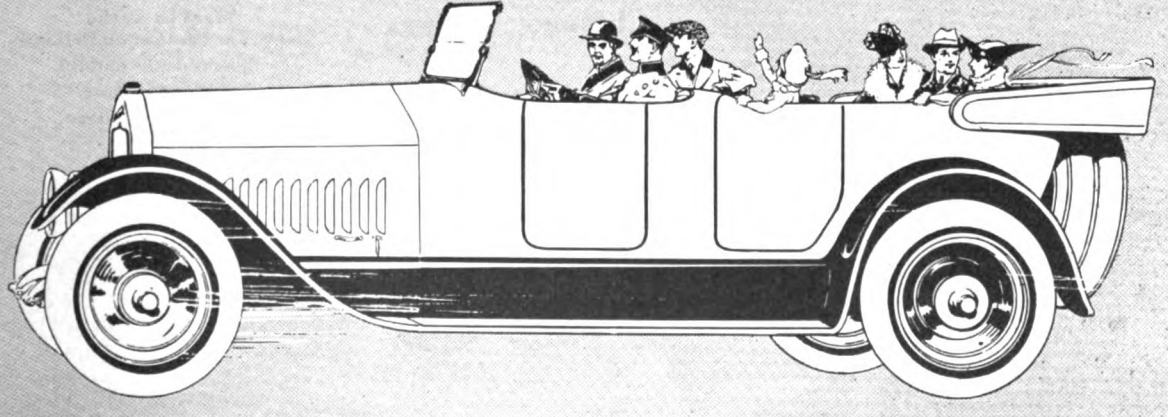
THE automobile dealer who can sell everybody the "best reserved seats on wheels" makes the most money and gets the best clients.

National "Highway" Six and Twelve cylinder cars are outdoors, what theatre *boxes* are indoors.

Six, $1750. Twelve, $2150.

Seventeenth Successful Year

NATIONAL MOTOR CAR & VEHICLE CORP. Indianapolis



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"Unconditional Satisfaction"

Any buyer of a Rayfield Carburetor has thirty days of service to decide whether he wants to keep it or get his money back.

There's never a risk in buying

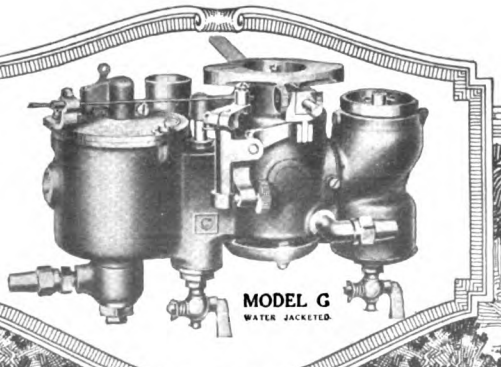
RAYFIELD CARBURETORS

Every Rayfield Carburetor is guaranteed to render "unconditional satisfaction" to its user. Dealers are authorized to sell it under our guarantee, and to return purchase price without argument within 30 days from date of purchase.

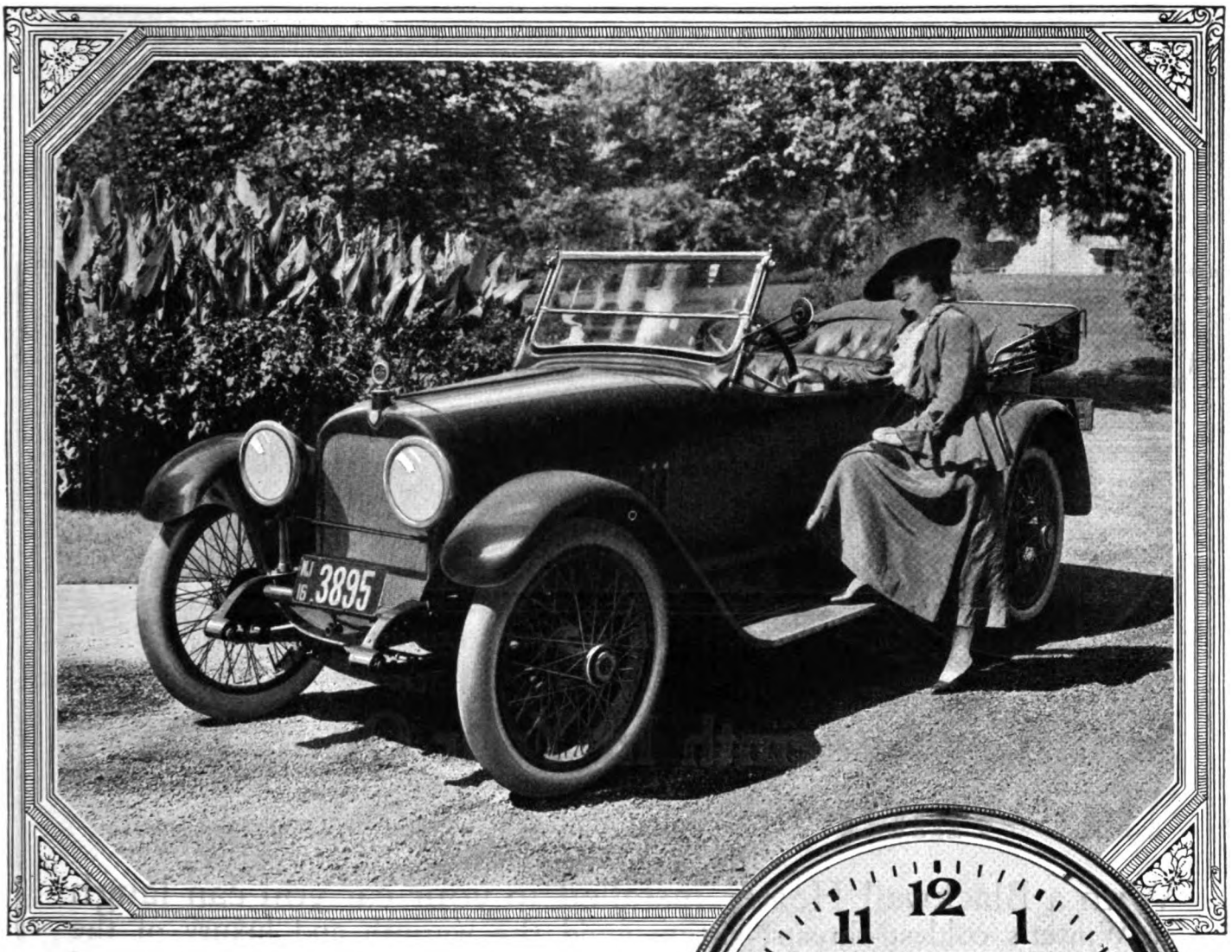
Findeisen & Kropf Mfg. Co.
2101 Rockwell Street
Chicago

BRANCHES:
1902 Broadway, New York
1140 Michigan Ave., Chicago

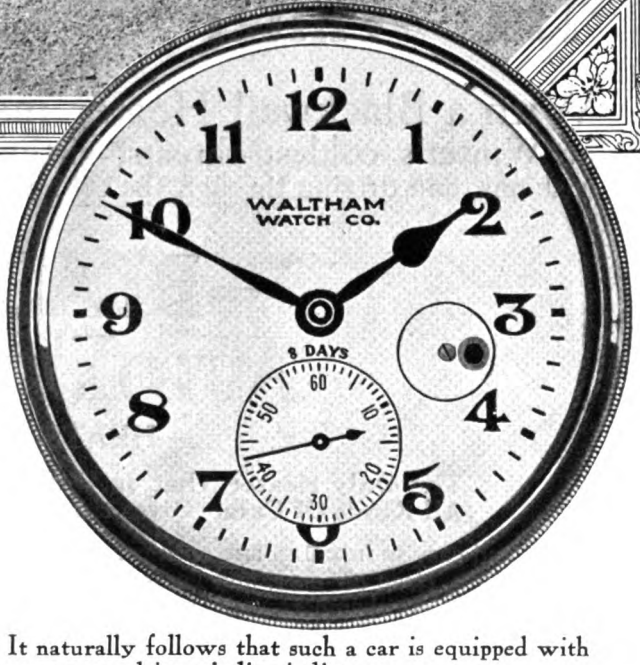
Meet us at the
New York Automobile Show
Spaces C-89 and 90
Chicago Show
Space 36 (Gallery)



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Only the Waltham is worthy of the Mercer



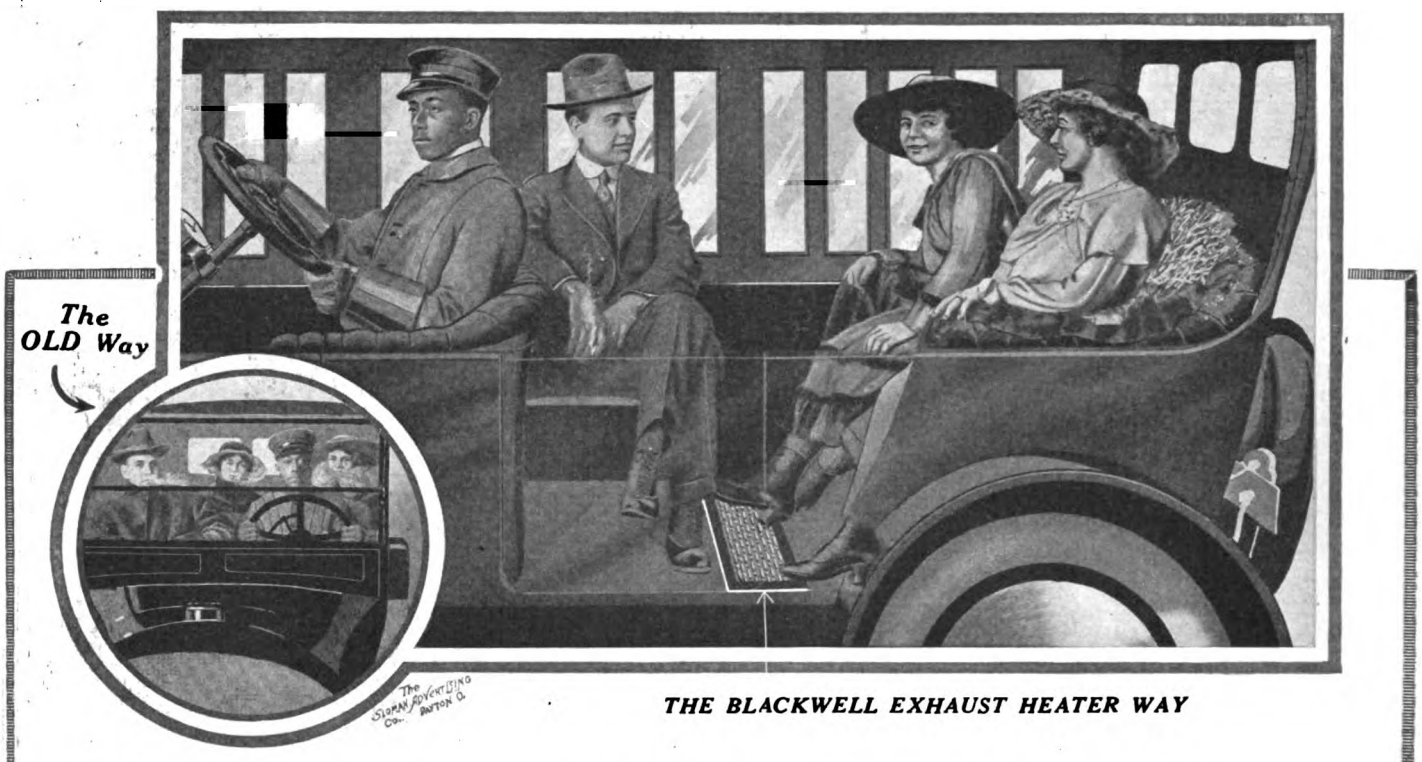
The Mercer is known as one of America's finest cars. It naturally follows that such a car is equipped with the Waltham Automobile Clock—with its 15-jewel, 8-day movement and its winding indicator.

The Mercer has achieved its distinguished position in the automobile world because the men who have guided it to success have never compromised with Quality in construction or in equipment. Such ideals literally prohibited the use of any clock other than a Waltham.

The Waltham is the only timepiece *capable* of giving satisfaction in an automobile, because it is the only one whose mechanism is constructed specifically for automobile use. There could be no other reason why so many of America's finest cars have adopted the Waltham as a standard feature of their equipment. Look at the names below. Wouldn't it be a paying proposition to put your car among them? Think over these: Brewster, Cadillac, Cole, Crane, Detroit Electric, Franklin, Haynes, Hudson, Locomobile, Lozier, Marmon, Mercer, Owen Magnetic, Packard, Pierce-Arrow, Rauch & Lang, Rolls-Royce, Simplex, Stearns, Winton. They all carry the Waltham!

WALTHAM WATCH COMPANY, WALTHAM, MASS.

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THE BLACKWELL EXHAUST HEATER WAY

Summer Warmth In Your Open Car This Winter

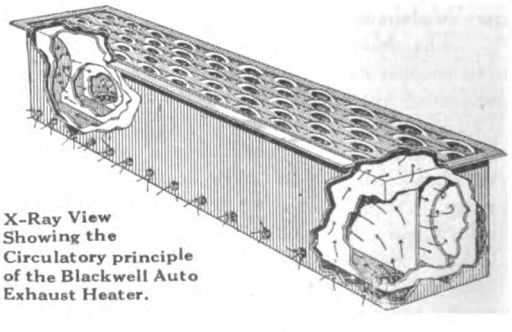
With a Blackwell Heater installed in your car you can laugh at Winter's coldest threats, sitting amid the warmth and luxury of the cushions, and driving through the cold air at any speed.

—BLACKWELL—
AUTO-EXHAUST-HEATER
—HEATS WITH FRESH AIR

The Only Heater That Is Welded—Not Riveted Throughout—Adapted To All Kinds Of Cars. Gives three times as much heat as any ordinary heater.

Quick and easy to install in any open car or limousine. Level with the floor wherever your patron wants it. *Draws pure, clean air only,* and heats it to a temperature that keeps any car warm in the coldest weather. Two circulation chambers—one for red hot exhaust gas; the other for fresh air that becomes thoroughly heated before being taken into the car. Absolutely *fume-proof.*

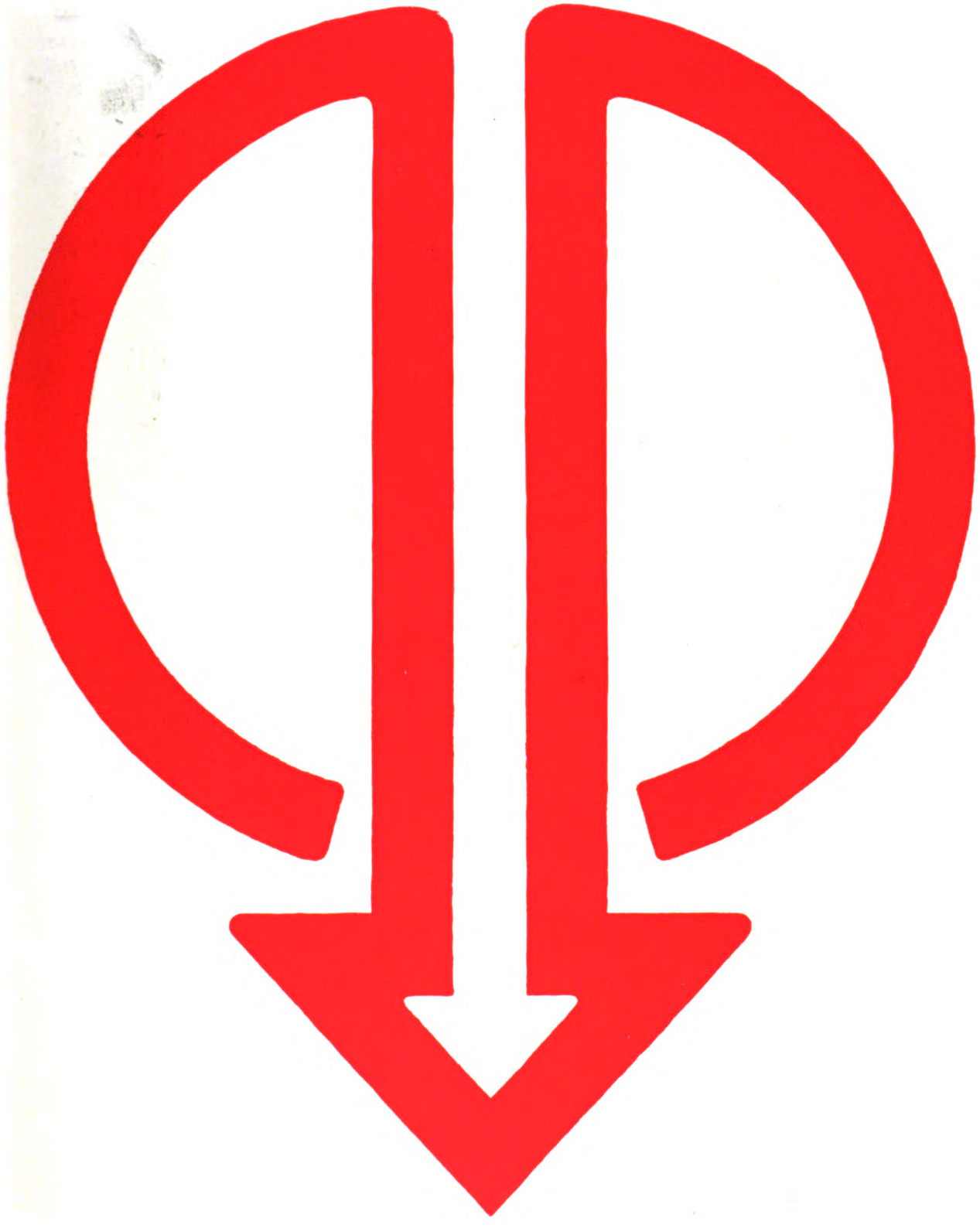
Hot parts are surrounded by 3/8" air space—with constantly circulating air—and asbestos-lined steel walls. Heated air that enters BLACKWELL heated cars is warm enough to heat, never stuffy, always SAFE. Dealers—Make Bigger Profits This Winter. Here Is the Most Talked-of Winter Accessory—With a Universal Market. Installations in season now, and for the next four months. Write or wire today for details and liberal discounts.



X-Ray View Showing the Circulatory principle of the Blackwell Auto Exhaust Heater.

DAYTON WELDING CO.
DAYTON, OHIO

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We're not quite ready to tell you what ⊕ is. But the news will be out soon. And when it does come—watch the stir it makes in the world of self-propelled machines!

Perhaps already a wise one has told you.

(OVER)

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(Continued from preceding page)

Perhaps you know how ⚲ puts the engine's power where it ought to be—how it out-o'-dates all slipping, spinning, skidding—those power-wasting, temper-trying, tire-scuffing results of the old-time drive.

If you know these things now you can appreciate how ⚲ is going to take hold of the imagination and the interest of every man who drives or makes or sells a car or truck or tractor.

And the world is going to know about ⚲.

Its light is too bright to stay under a bushel.

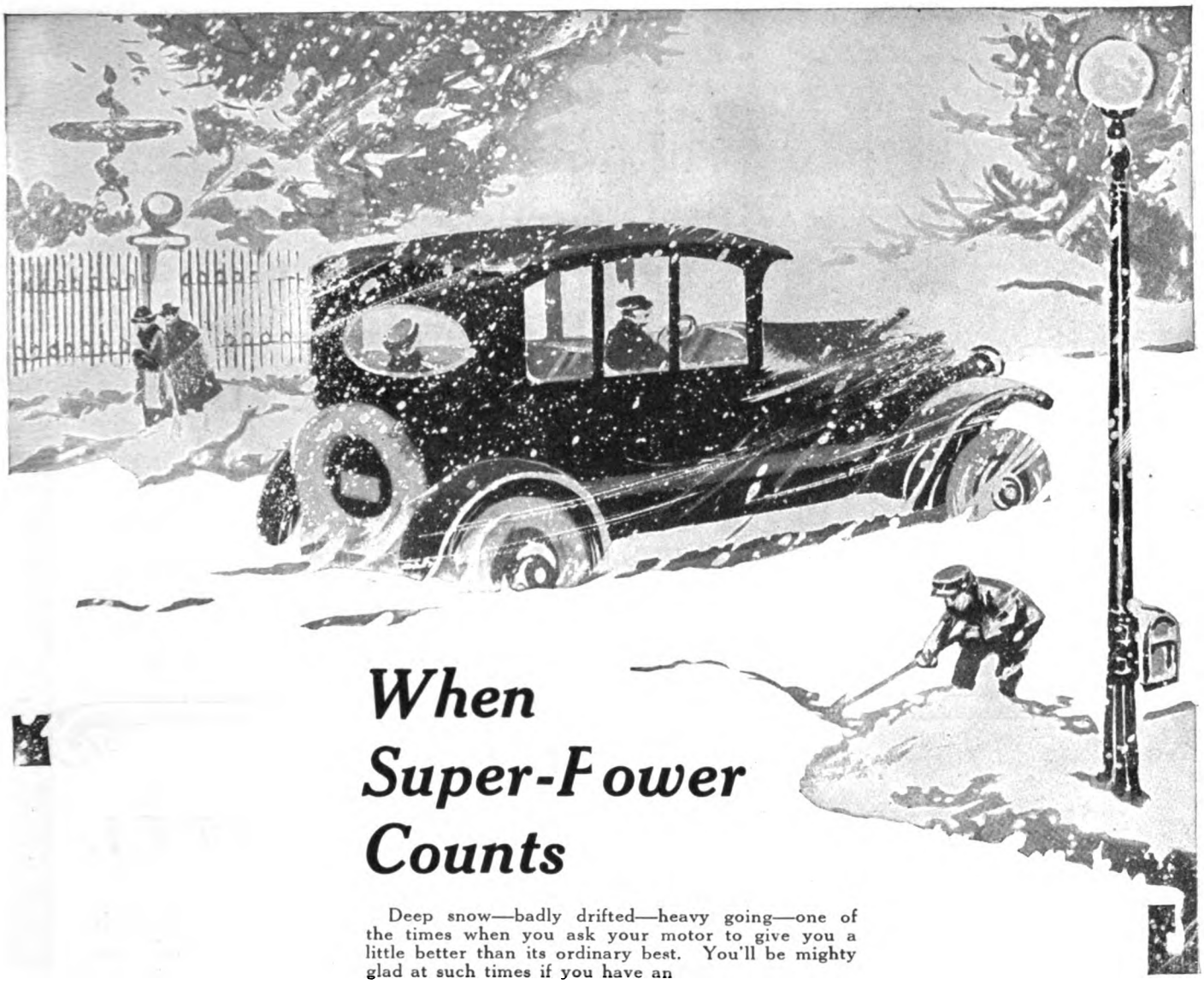
$1,000.00

For Sensible Letters

Soon the terms will be announced. Watch these advertisements and learn how you, perhaps, can easily take in 50 to 500 dollars.

But—if you want *advance* information—address Box P-6, Motor World, New York

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When Super-Power Counts

Deep snow—badly drifted—heavy going—one of the times when you ask your motor to give you a little better than its ordinary best. You'll be mighty glad at such times if you have an

EISEMANN
MAGNETOS

That flashing, burning hot Eisemann spark gives you a full explosion every time. You can count on it absolutely, however rich or lean the mixture, whether the motor is racing or barely turning over.

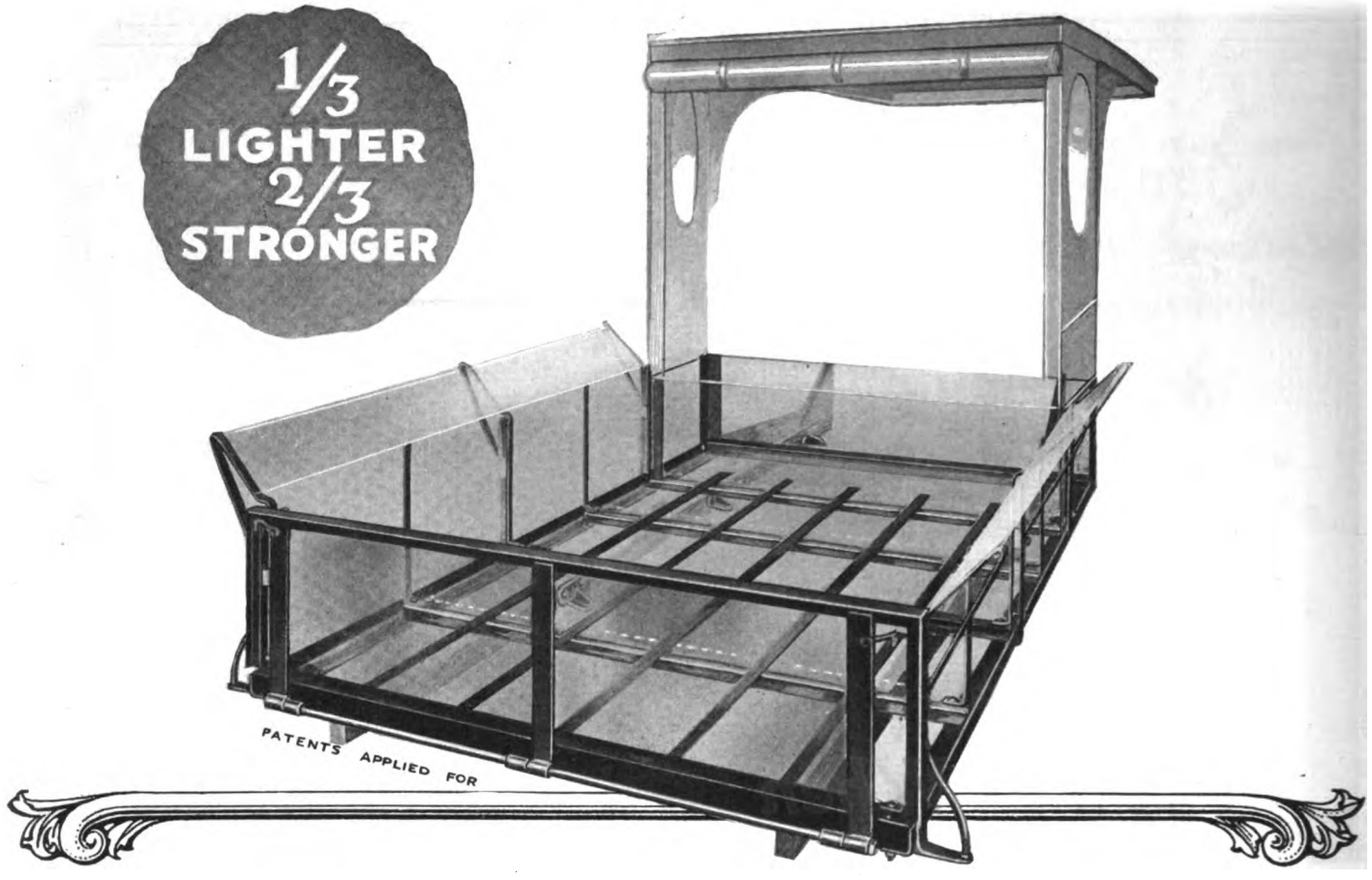
The best motor is better if you give it the Eisemann kind of ignition. The great ignition experts know this is true. That is why 108 manufacturers of Pleasure Cars, Trucks, Tractors, etc., have adopted Eisemann Magnetos as standard equipment.



THE EISEMANN MAGNETO CO.

Sales and General Offices:
32-33rd St., Brooklyn, N. Y.
Detroit, Mich., 802 Woodward Ave.

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THE FOUNDATION OF STEEL

which cuts the weight while doubling the strength.

This steel skeleton (fully protected by the Babcock Patents) is found exclusively in Babcock Commercial Bodies. It is the answer to the universal quest for lightness without sacrifice of strength. It is the explanation of the superior rigidity and durability of these bodies in spite of the fact that they are 40 per cent lighter than any others of equal size.

BABCOCK

COMMERCIAL BODIES

The finest and toughest open-hearth angle steel is fitted and bolted so securely to sill, cross-sill and upright (all of selected native hard woods) as to produce in reality as well as appearance one homogeneous material wonderfully strong and light.

The remarkable saving of weight which results from this blending of steel and wood, while retaining the desirable qualities of both materials, is only one of the many features which make Babcock Bodies superior to all others. All irons are bolted or riveted, and wherever strain occurs steel plates are placed between the bolt heads and the wood. There is steel reinforcement at all points exposed to wear or strain, but that reinforcement is not merely a brace or patch; it is essentially one with the rest of the body.

Babcock Bodies are manufactured in thousand lots in a plant comprising over 12 acres of floor space and affording every facility for economy in production, thus enabling us to offer **a body for every need** at remarkably reasonable prices.

Body Buyers—Demand this absolutely unequalled combination of Babcock Quality and Economy!

To Agents for Ford and all other cars, one-ton trucks and various Ford Extensions:

You cannot afford to ignore the popular demand for Babcock Quality and Economy!

Let us show you the advantage in meeting this intelligent discrimination.

We Solicit All Inquiries

H. H. BABCOCK COMPANY

WATERTOWN, FOUNDED 1845 NEW YORK.

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BATAVIA

In distributing

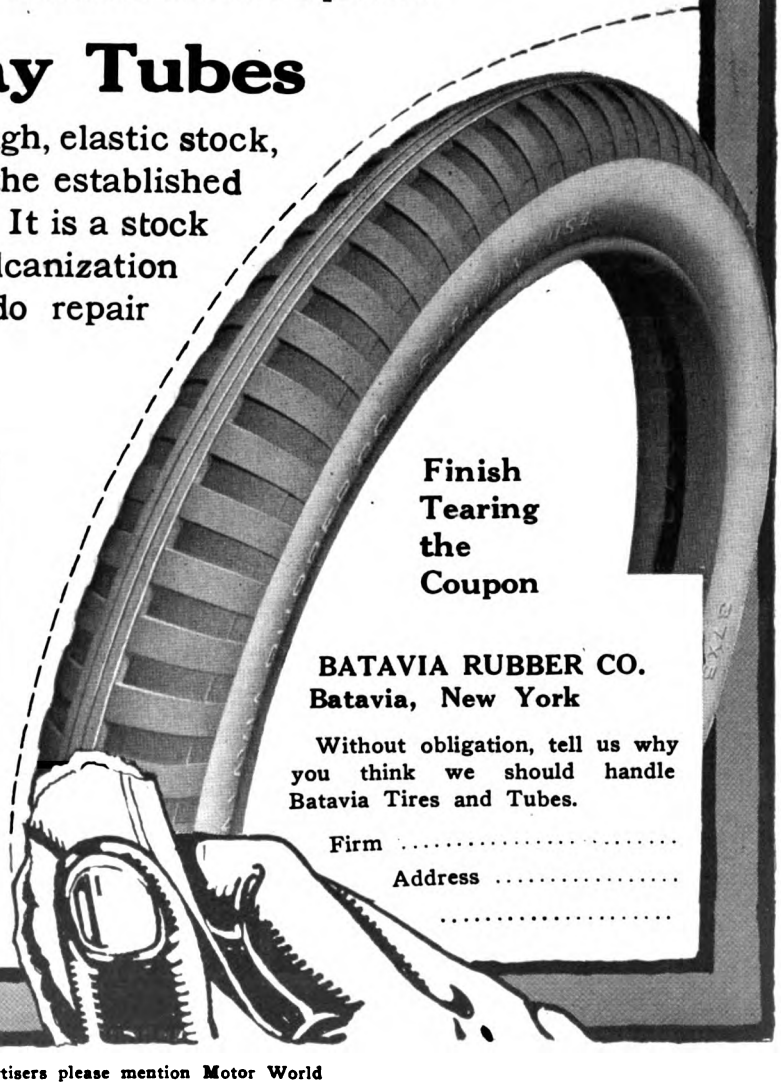
BATAVIAS

you are selling an article that you market at a flat price. Exclusive protection in your own territory means secure profit margins.

You are also selling Quality and Consumer's Satisfaction, the two things that mean repeat sales. For Batavia casings are long-lived, resilient, swift and safe. The Batavia Security Tread was the first successful application of the correct non-skid principle. Its indented tread has been imitated but not equalled.

Batavia Gray Tubes

are made of high grade, tough, elastic stock, with wall thickness above the established minimum and in full size. It is a stock that flows freely under vulcanization —most important if you do repair work.



Do you live in Georgia ?
Then get one of these important territories now open:

Atlanta	Macon
Columbus	Rome
Savannah	Valdosta

Finish Tearing the Coupon

BATAVIA RUBBER CO.
Batavia, New York

Without obligation, tell us why you think we should handle Batavia Tires and Tubes.

Firm .....
Address .....
.....

Batavia Rubber Co.

FACTORY AT
BATAVIA NEW YORK

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Standard Model $15
Utility Jr. For Fords $7.50

NOW —Winter— Is The Time To Sell UTILITY

$15 HILL PUMP VALVE CO. UTILITY CHICAGO U.S.A. $7.50

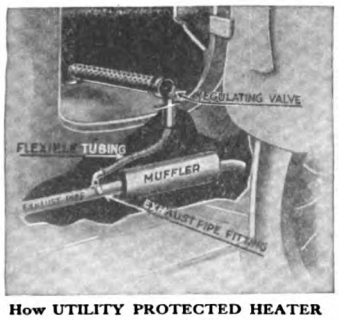
Protected Heaters

Right now, when fingers tingle and feet get so cold that it hurts, is the time to sell heaters that really heat. The coldest days of winter are still to come and thousands of

Cold Prospects Are Waiting To Buy

UTILITY Protected Heater dealers are having the biggest run on heaters they have ever known—and the prospects are that in the next 60 days high-record sales are going to be broken all over the country by the tremendous UTILITY demand.

Get into the band wagon now. Beat the coldest months of winter to it, by stocking UTILITY Protected Heaters at once. The doctor, the R. F. D. mail carrier, the salesman, the farmer, the millionaire, the Ford owner—all are *immediate prospects* for the foot rail heater that really heats.



How UTILITY PROTECTED HEATER Is Attached to the Exhaust

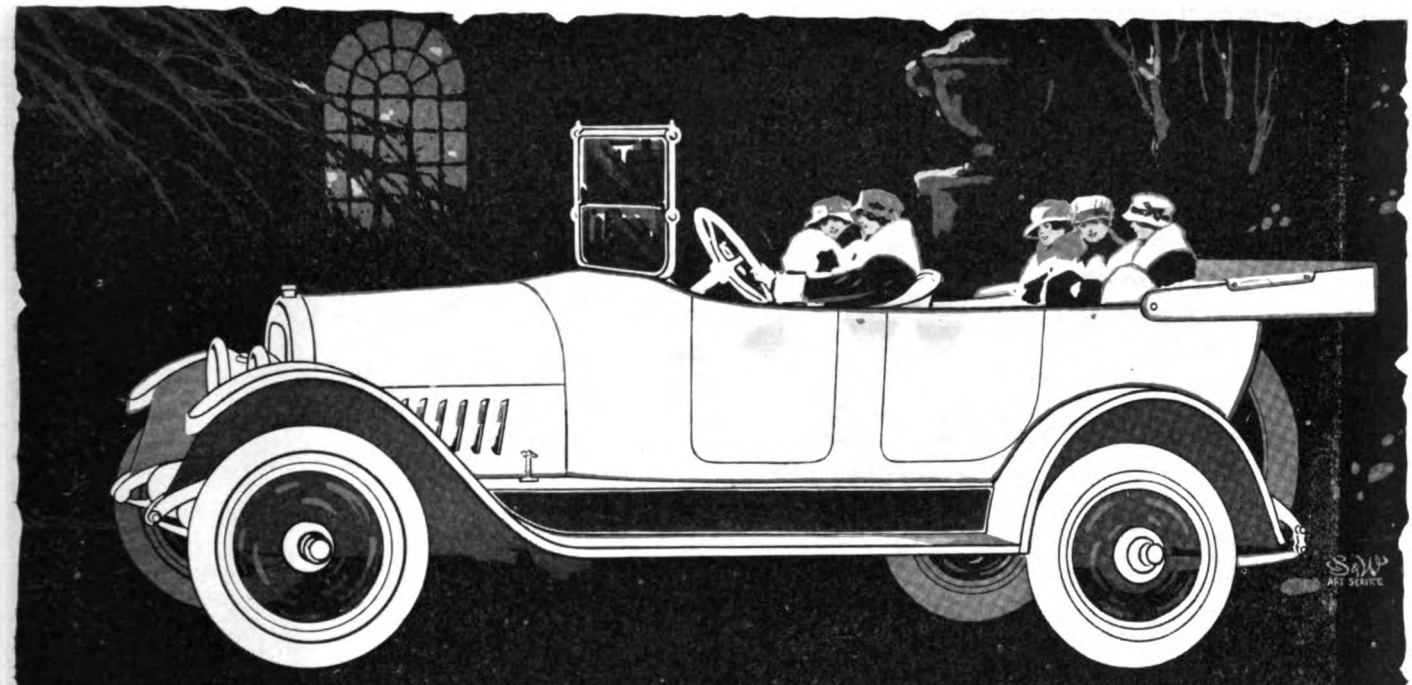
Price, quality and results sell UTILITY Protected Heaters. Liberal discounts insure good profits.

Write for complete details.

Hill Pump Valve Company
Archer Ave. & Canal St.
CHICAGO
Manufacturers of Famous UTILITY Auto Specialties

One Model for all Big Cars
Standard Model Only $15
Utility Jr. For Fords $7.50
One Model for Fords

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STEPHENS SIX

"Best By Test"

Proud Heir to a Half Century of Experience

Thirty years before the first horseless carriage was hailed with hoots of derision the character of the Stephens Six was molded.

America had not yet ceased to rejoice over the peace of Appomattox or to mourn the world loss of Abraham Lincoln when in 1866 the Moline Plow Company, the company that builds the Stephens Six, was organized, little realizing then that one of its destinies was the manufacture of automobiles.

Year after year dropped into the bottomless abyss of Time. Experience, a priceless thing, was bred; prestige, equally as priceless, was established.

And finally came the motor car and the age of gasoline.

A New Machine of Old Ideals

Above all else, the Stephens Six is substantial.

The experience of more than half a century guided the hands that designed the car and constructed the parts and assembled them.

Steel is not the only symbol of sturdiness in an automobile. **The reputation of the maker also gives it stamina.**

And, again, the Stephens Six was built to uphold the prestige that the Moline Plow Company has gained in fifty-one years of endeavor in the manufacturing world. Such prestige is too valuable to be made the stake of a gamble. The Stephens Six does not represent the throw of the promoter's dice box; it is an achievement carefully planned and skillfully constructed to perpetuate a reputation for quality and value that only years of labor, under the spur of high ideals, can bring.

Our handsome 1917 models will be exhibited at the Chicago Automobile Show in Booth No. 13 of the Coliseum basement. You are cordially invited to look us over while at the show and learn why the Stephens Six is in a class by itself and offers greater value than any other motor car.

STEPHENS MOTOR

MOLINE Branch of Moline Plow Company **ILLINOIS**

Two Models, Each $1150
Five-Passenger Touring Car
Three-Passenger Roadster

Dealers will find the Stephens Six a trade magnet worthy of consideration. Write for territory.

STEPHENS MOTOR
Branch of Moline Plow Co.
MOLINE, ILLINOIS

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See us at the
Chicago Show
Coliseum
Basement
Space 18-A

POVASCO
STEERING
WHEELS

COMFORT, BEAUTY and UTILITY

POVASCO WHEELS give beauty and distinction to any car. They provide also comfort and economy. Their basic construction of Condensite or Bakelite insures permanent durability and permits the maintenance of a brilliant finish on the wheel. It makes them also indestructible.

The tilting feature, (forward or back, up or down) makes them an accessory that is in the class of a necessity—it takes the cramping out of the driver's position. And the hand-warming feature procures comfortable driving all Winter and during the beautiful but cool nights of Spring and Fall.

Povasco Wheels present a wonderful opportunity for a distributor who is a merchant. It needs only small capital—every sale carries a solid profit. Live men should write for our proposition at once.

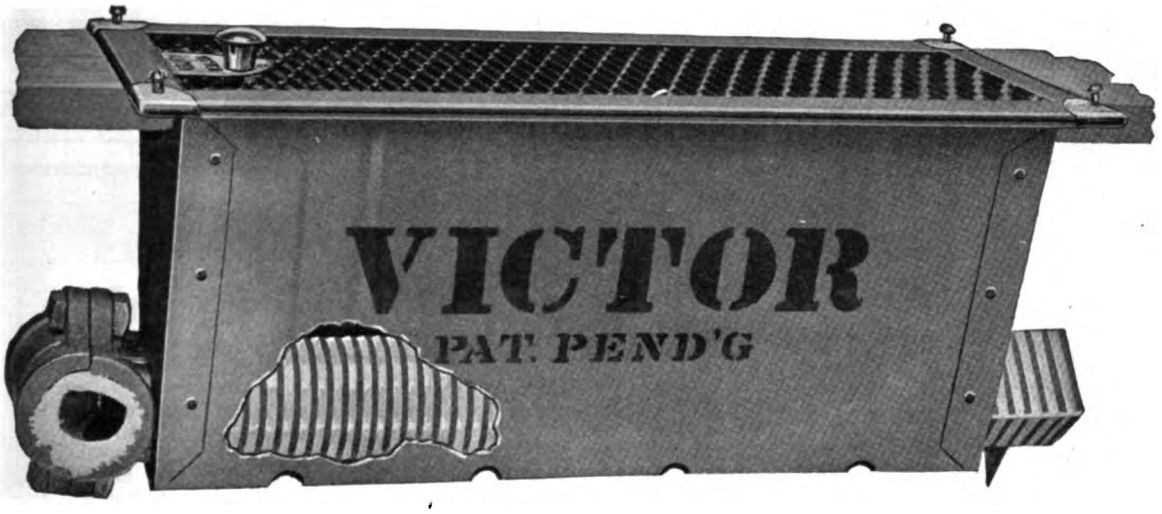
Pouvailsmith Corporation
Poughkeepsie,
New York



When writing advertisers please mention Motor World

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Victory for the Victor



"The FORD heater that makes Winter behave"

The instantaneous success of this instantaneous fresh air heater—has overwhelmed us.

The entire possible output of Victor Heaters up to March, 1918, is being allotted now.

Get in line now

Don't blame us if you cannot supply what your trade requires this season and next.

Protect yourself. Follow the lead of the biggest successful jobbers and dealers in America.

See us at the New York Show

—let us show who is handling the Victor, what they think of it, how you can secure territory and big sales.

Or see the Victor Heater in New York, at

W. E. Pruden Hardware Co.
864-866 Eighth Avenue
260-262 West 52nd St.

Moreau & Pratt, Inc.
1834 Broadway

Victor Heater Co.

Factory and Main Office:
109 Erie Street Camden, N. J.

Retails at $5.

Allows a liberal margin to the dealer.

Uses waste exhaust.

Gives heat in half a minute.

Fresh, pure, clean, heated air—not heated metal.

No cutting of floor necessary—end boards furnished.

Attached by any man in 20 minutes—all attachments included.

Sold on 5 days' trial basis—must prove every claim.

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Vulcanizing Plant

You don't even have to go out and solicit business. All your storage patrons are prospective customers and they come to your garage every day. When these auto owners come to you for supplies, gasoline or oil, they will gladly give you their tire repair work. You can keep tab on their tires and remind them when vulcanizing is needed.

No need to go to school to learn to use a Shaler. Anybody who can clean or adjust a car can operate a Shaler because of the simplicity of Shaler Wrapped Tread Method and Automatic Heat Control.

This Shaler system has been used successfully by prominent tire makers for many years. The tires are never disfigured as by sectional repairs and the repair is made as strong as the tire itself because it becomes an integral part of the tires.

The Automatic Heat Control is an exclusive Shaler feature that keeps the temperature of the vulcanizer exactly at the right point without any watching or regulating. The vulcanizer can't possibly overheat a tire, the operator can use all of his time in preparing repairs because the vulcanizer doesn't need to be watched.

Mail the coupon and get the whole Shaler story and catalog.

C. A. SHALER CO. 447 Fourth St., Waupun, Wis.—*The Largest Manufacturers of Vulcanizers in the World*

Canadian Distributors: JOHN MILLEN & SONS, Ltd., Toronto, Winnipeg, Montreal, Quebec, Vancouver

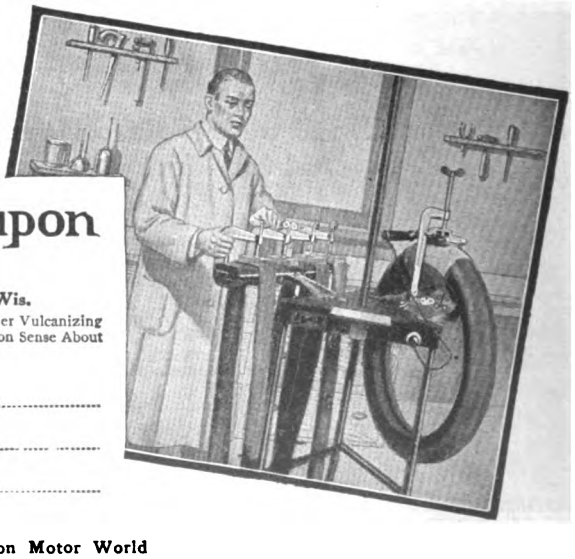
Nationally Advertised



$65.00

Steam or Electric

Subject to trade discount.



Mail this Coupon

C. A. Shaler Co.,
447 Fourth Street, Waupun, Wis.

Please send me full particulars about Shaler Vulcanizing Plant, low discount price and book, "Common Sense About Tire Repairs."

Name .....

Address .....

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ACME
THE TRUCK OF PROVED UNITS

CONTINENTAL MOTOR
TIMKEN AXLES
TIMKEN BEARINGS
TIMKEN WORM DRIVE
AND ALL OTHER PROVED UNITS

New Acme Selling Plan Means *Quick* Truck Profits!

Wire or write to-day to know if your territory is still "open." Our big business building offer is available for you if no other dealer in your territory has crowded you out. Quick truck profits are yours if you get in first—ahead of your competitors.

Better Business All Around

Better business all around—quicker and bigger profits are in store for alert motor merchants who seize this opportunity. Keen dealers who already have wired for details of our offer *know* this is no ordinary agency proposition. They know this new plan actually cuts expense—actually builds up business. There's strong factory co-operation behind it. For instance, we are going to CONCENTRATE OUR ADVERTISING IN OUR DEALERS' LOCAL PAPERS. That's only one feature.

Acme Trucks are of *proved* unit construction. Powerful Continental Motor—Timken Axles, Bearings and Worm Drive, etc. Take Acme 2-Ton, for example: 40 H.P. Motor, 148-inch wheelbase, full floating rear axle, easy clutch, 16-inch brakes, chassis 217½ inches over all. Economical in use of gasoline and oil. Other capacities: 1-Ton and 3½-Ton.

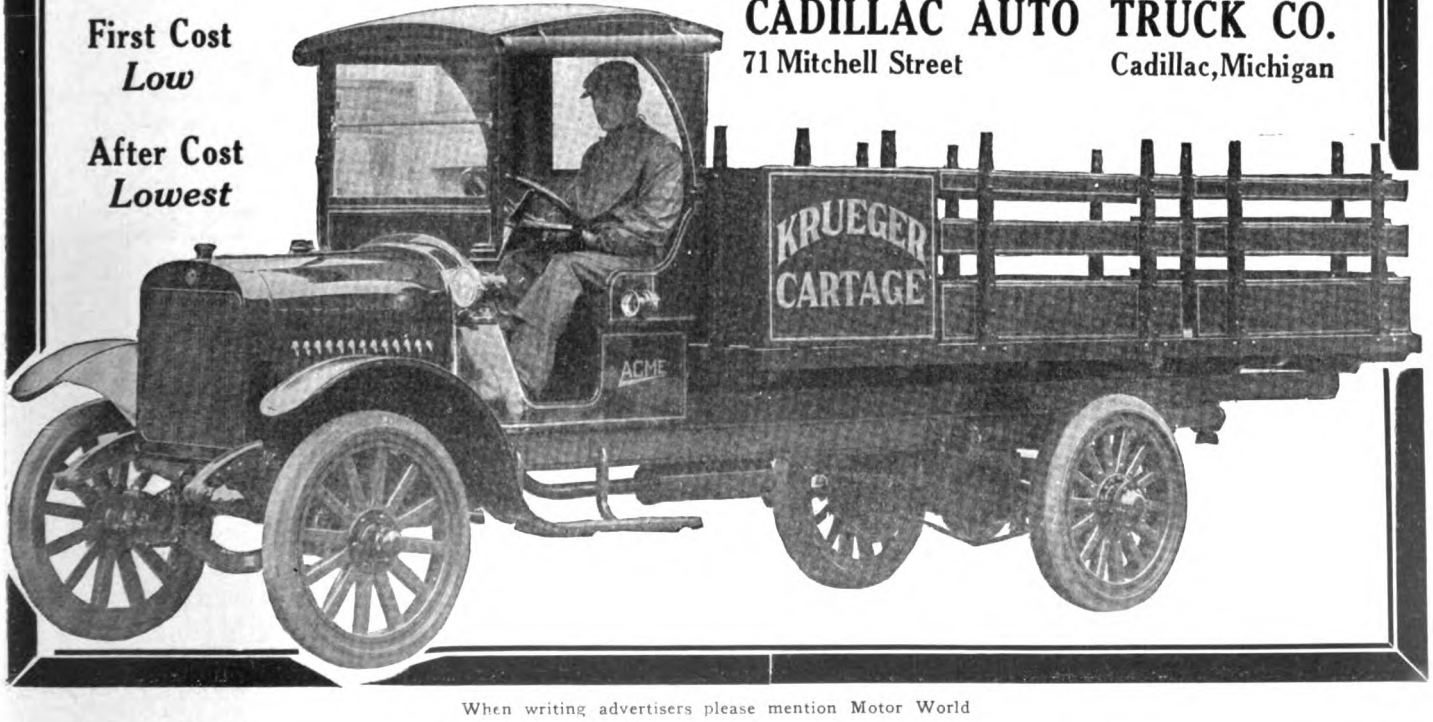
WIRE or WRITE To-day to Know ALL Details of New Plan

Territories are being rapidly reserved. Dealers are awake to the bigness of our offer. You'd better *wire*—if not, *write at once*. Thousands are reading this announcement in Motor World. Protect your own interests. Reserve your territory immediately.

First Cost *Low*

After Cost *Lowest*

CADILLAC AUTO TRUCK CO.
71 Mitchell Street Cadillac, Michigan



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DIXIE 20TH CENTURY MAGNETO

The Plug with the Green Jacket



Lighting and Starting Systems

AMMETERS

Conscientious manufacture and comprehensive service are prevailing characteristics of the Giant line of

SPLITDORF DEVICES

If you've the motor we've the RIGHT ignition for it

SPLITDORF ELECTRICAL COMPANY
NEWARK, NEW JERSEY

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"Eklips" SPARK PLUG

A FAST SELLER

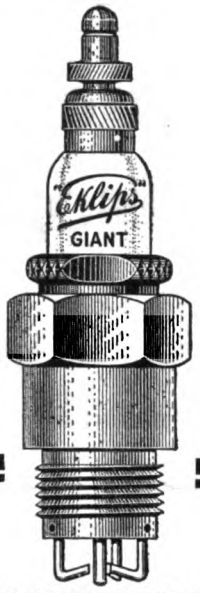
Well-finished. Heavy construction. A quality plug for car owners who want the best. Made in different styles, sizes and threads to fit all pleasure and commercial cars.

Oil Drip Feature—Prevents fouling of sparking points.

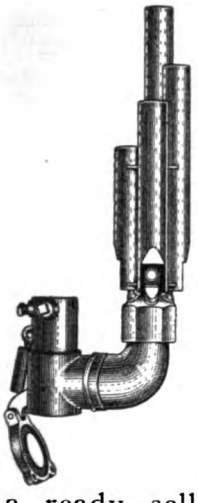
Soot-Proof—Cleans itself at every shot.

Leak-Proof—Shell is insulated by specially heavy asbestos gaskets.

MULTI-POINT This feature adds certainty to a good spark and is desired by those who know.



The AERMORE Exhaust Horn



The horn with the wonderful, musical sound. Never frightens but amply warns at long or short distances. Cannot clog; requires no wires or batteries; has no movable parts to wear and get out of order. Lasts as long as the car and is good as long as it lasts. Gives **"The Signal with a Smile."**

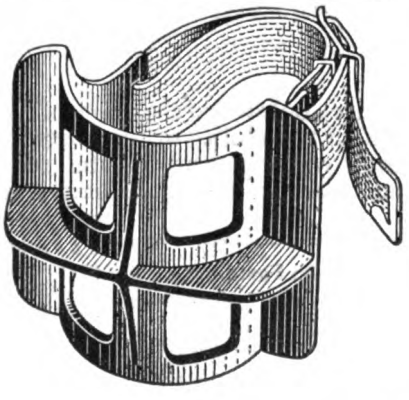
Substantially made and a ready seller to discriminating car owners. Three sizes to fit all cars.

See Your Jobber about "Eklips" Spark Plugs, Aermore Horns and Fulton B. B. Mud Hooks.

FULTON B. B. MUD HOOKS

A patented article that has saved its price a dozen times for hundreds of motorists. Strap to each rear wheel. The side flanges give an easy but firm grip on the mud, snow or sand, enabling the car to pull itself out. Can be put on or removed in a minute. Will not turn on tire. Made of malleable iron with strong web strap. Sells to the average motor car driver on sight.

Note Those Side Flanges



C. & E. AUTOMOBILE ACCESSORIES

C. & E. Wheel Puller for Fords

Small and light but strong and efficient. Made of malleable iron. Furnished either with lever or set screw. Side adjustable feature insures exact fit and eliminates possible stripping of threads. Gets the wheel off every time.

Other C. & E. Mfg. Co. Products

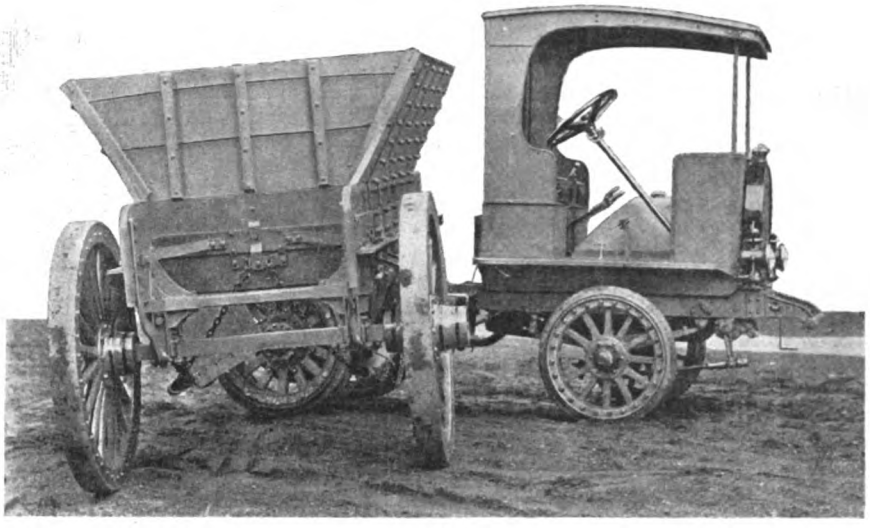
Muffler Cut-Out Outfits—Foot Accelerator for Ford—Chain and Galvanized Cable—Pressed Steel Pulleys—Cut-Out Valves—Locking Foot Pedals—Fender Braces for Ford.

THE FULTON CO.

721-23 National Ave. MILWAUKEE, WIS.

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Study These Big, Exclusive Watson Tractortruck Features



YOU will not find them on conventional trucks. These are Watson advantages, devised by Watson engineers, and found only on the

100% WATSON Tractortruck

Pictures below tell the story of Watson predominance, of the ability of the Watson Tractortruck to handle with ease and dispatch and at lowest upkeep cost every conceivable heavy duty hauling job.

Watson Features:

Turns in its own length without backing.
Undercut bottom dump.
Gravity—not power—does the Dumping.
60% of load carried on steel tire.
Sub-frame carries weight of power-plant, tank and seat when truck is empty.
Utmost flexibility; various types of trailers can be used with same tractor.
Minimum gasoline consumption.
Lowest upkeep cost.
Greatest Tire Service.

Watson Dump Wagons too, are recognized leaders. They are in daily use wherever greatest strength, convenience, and stamina are foremost.

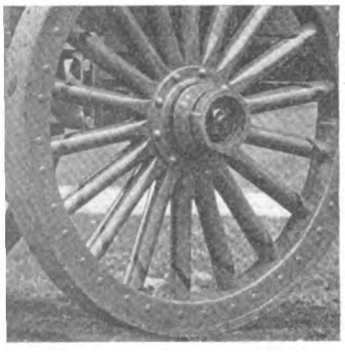
Watson Tractortrucks, Trailers, and Wagons are constructed entirely in the Watson Company's own plant—the largest Dump Wagon factory in the world—and are the outcome of many years constant application to the development of the highest grade, most advanced heavy hauling equipment.

Illustrated Catalogs and special literature sent anywhere on request.

DEALERS—To couple up with the Watson Selling Plan is to secure quick returns and a permanent, ever expanding business. A wire will bring specific details.

WATSON WAGON COMPANY
40 W. Centre Street **Canastota, N. Y.**

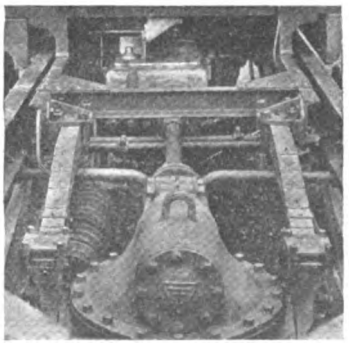
Tire Saving—*60% of load carried on steel tires*



Labor Saving—*Famous Bottom Dump — unloaded by gravity*



Wear Saving—*Sub-frame protects vital parts when running empty*

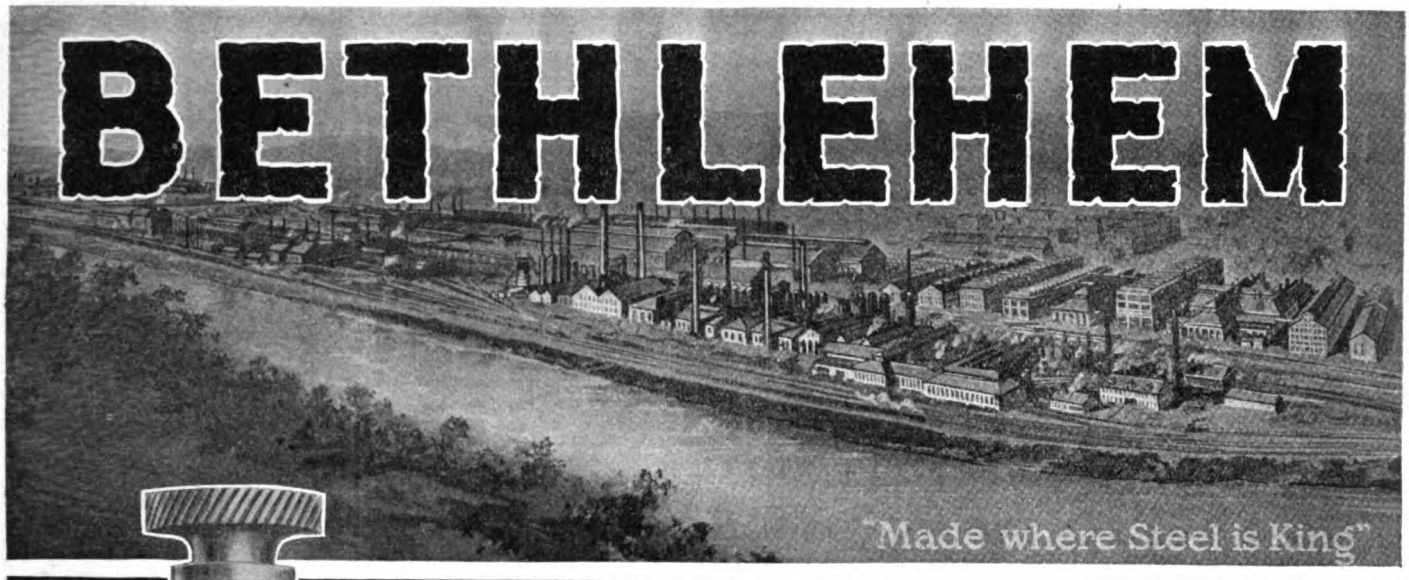


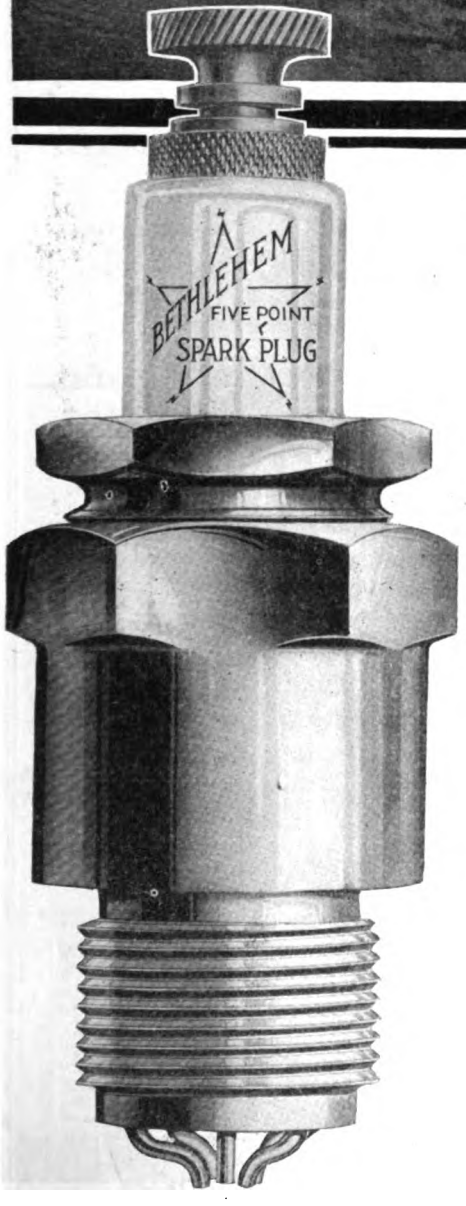
Time Saving—*Shortest turning radius without backing*



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BETHLEHEM





5-Point Spark Plug

THE FIVE "POINTS" That Make a Winner

FIRST: Bethlehem Spark Plugs are made by a big, substantial, well-known organization, with unlimited resources and the physical and moral ability to keep its word.

SECOND: Strictly highest grade product made to sell at a fixed price and allow a fair margin for profit to the seller.

THIRD: Not built to land equipment contracts on a competitive price basis.

FOURTH: The absolute efficiency of the five-point plug itself—which warrants the manufacturers' guarantee for the life of the car on which it is installed.

FIFTH: The elaborately planned national advertising "follow up" and dealer co-operation campaigns which will keep Bethlehem products moving and making quick "turn-overs."

GUARANTEED for the life of your CAR

Write for new dealer data.

THE SILVEX COMPANY
BETHLEHEM PRODUCTS
South Bethlehem, Pa.
E. H. SCHWAB, President

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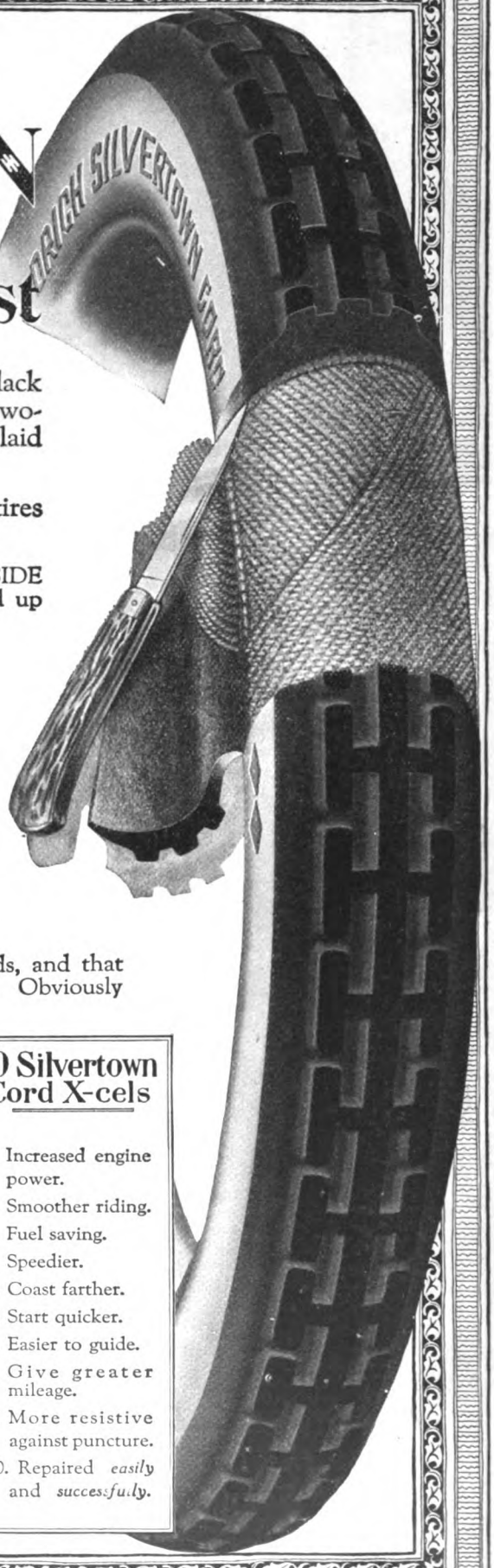
FAIR LIST PRICES FAIR TREATMENT

GOODRICH

SILVERTOWN

CORD TIRES

Stand the Knife Test



BEFORE you, its thick tough Goodrich Black Safety Tread slashed back, its sinewy, two-ply rubber-saturated cable-cord body laid bare, stands a Silvertown Cord Tire.

Before you stands the whole story of why tires WEAR. And why tires WEAR OUT.

For, contrary to common belief, tires wear out INSIDE—not *outside*—from internal frictional heat, rubbed up between the plies of the tire.

Each extra ply means extra inside heat—extra wearing out of the tire.

Were you to put the knife test to *all* tires, you would find three types of bodies:

Cotton fabric, swathed in five to seven plies;
Thread cord, or *web,* (strings the size of a trout line, held parallel the circumference of the tire by interspaced cross-threads) gummed together in five to seven plies;

Cable-cord, the unique, patent-protected cross-wrapped, *two-ply* structure, found ONLY in Silvertown, the original cord tire.

Mark well the sturdy size of Silvertown's cable-cords, and that they are ***cross-wrapped*** into ***two plies*** and ***but two.*** Obviously Silvertown with but two plies must outlast ***many-ply*** tires with their ***multiplied*** inside heat.

Out of this ***durability,*** and the ***resilience*** of those flexible cable-cords, come Silvertown's ***gasoline-saving economy, smoother riding comfort,*** and ***prolonged mileage,*** you cannot afford to be without.

Know Silvertowns by their graceful *extra-size,* and their RED DOUBLE DIAMONDS.

10 Silvertown Cord X-cels

1. Increased engine power.
2. Smoother riding.
3. Fuel saving.
4. Speedier.
5. Coast farther.
6. Start quicker.
7. Easier to guide.
8. Give greater mileage.
9. More resistive against puncture.
10. Repaired *easily* and *successfully.*

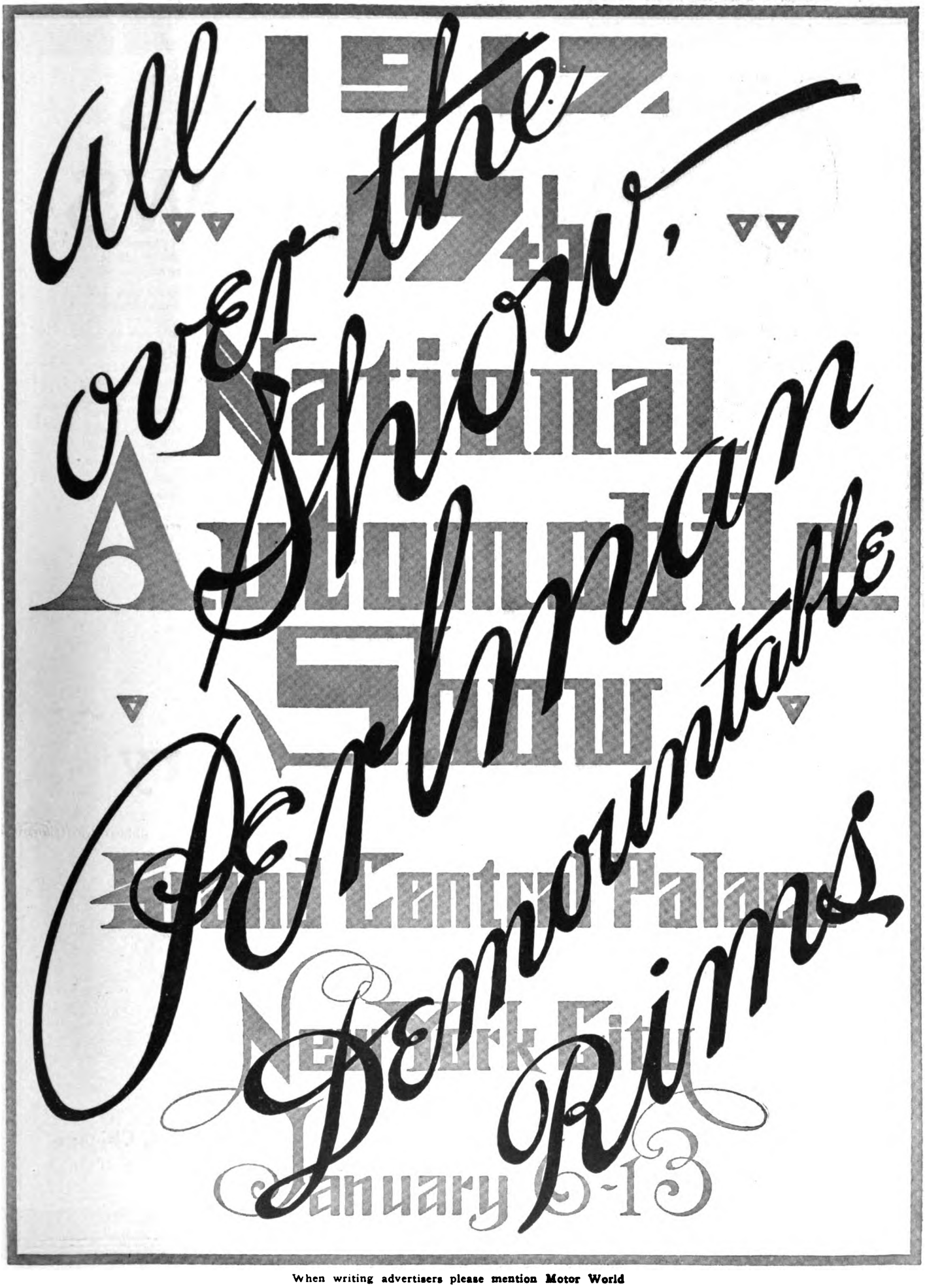
The B.F. Goodrich Co.

AKRON, OHIO

Also maker of the famous fabric tires
Goodrich Black Safety Treads

Silvertowns Make All Cars High-grade

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THE NATIONAL AUTO SHOWS

Under Auspices of National Automobile Chamber of Commerce, Inc.

At CHICAGO

Coliseum

and

1st Regiment Armory

January 27 to February 3

Passenger Vehicles—Parts Accessories

S. A. MILES, Manager **Auditorium Hotel, Chicago**

The Usual Courtesies to Visiting Dealers

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A Car Whose Performance Lives Up To Its Appearance

MONROE

"The Car that Convinces"

The Monroe car is equipped for maximum service without any extravagance. It is conservatively built. Those essentials which have proved themselves necessary for the highest efficiency have all been incorporated in the Monroe car.

You find a highly developed and refined 4-cylinder cast en bloc, valve-in-head motor, with removable cylinder heads. An M & S locking differential is installed in the rear axle, securing equal traction when differential action is not necessary. These features are incorporated as being significant of the best engineering trends of the day and contributing to the high service qualities of the Monroe car.

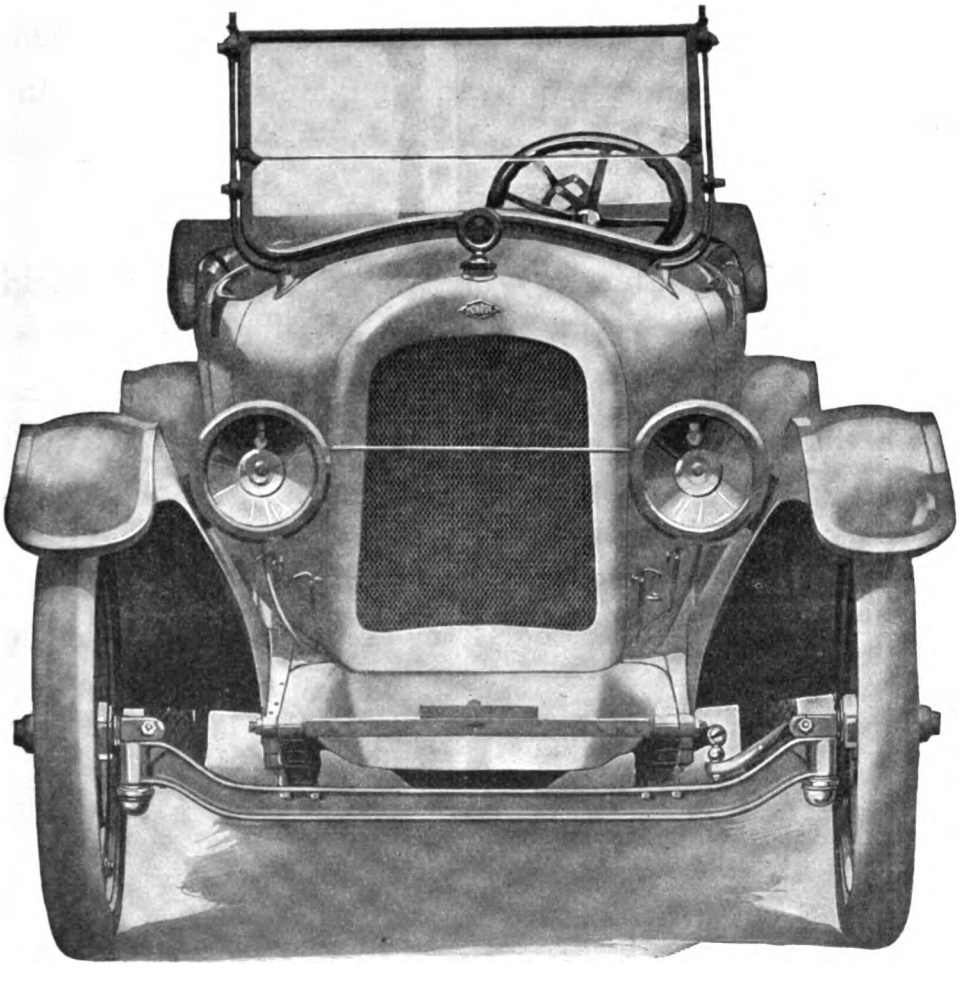
MONROE

Other features which might be mentioned as putting the Monroe car in a class with the most expensive cars are the use of a pressure oiling system and low frame construction, with compound cantilever springs. The rest of the equipment of the Monroe car is up to this high standard, which makes the Monroe, selling at $985, a unique value.

We know that there is a large market for a car such as the Monroe. The question is to get in touch with those dealers who can present the Monroe quality proposition in the right way to the thinking class of buyers.

If you are in a position to do business with a clientele who knows what construction and quality means, let us know what you have to offer and we will advise you of our terms and discounts.

Pontiac MONROE MOTOR COMPANY Mich.



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Distribution

¶ There is a vast army of intelligent and able Dealers, Jobbers, Salesmen and Garage Owners throughout the country who are receptive, and who will respond to your merchandise message if you get it home to them **now.**

¶ Many of these distributers are at the New York Automobile Show this week. Other thousands will attend the Chicago show, January 27 to February 3.

¶ Most of them are readers of Motor World. They depend upon this exclusive merchandise and maintenance paper for instruction and guidance in their purchases, and in the successful administration of their business.

¶ The Before (Chicago) Show issue of Motor World will be out Jan. 17th. It will devote many editorial pages to a review and intimate consideration of car accessories and supplies. The issue will represent unusual advertising value. Last forms close Monday, January 15.

¶ If you have not arranged for representative space in this all important merchandising number we urge that you do so at once.

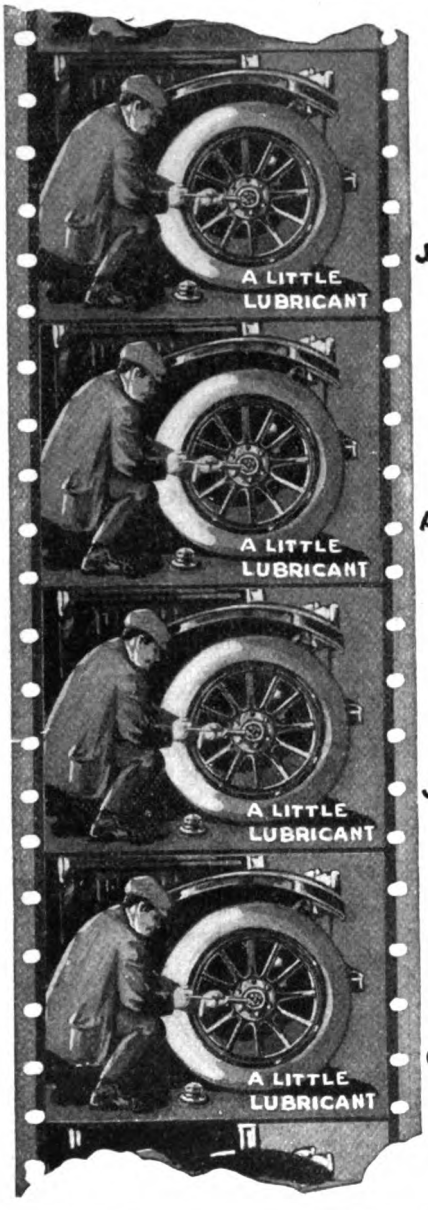
MOTOR WORLD
DEALERS, JOBBERS AND GARAGEMEN

239 West 39th Street
New York City

When writing advertisers please mention Motor World

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BOWER SAVES POWER



JANUARY

APRIL

JULY

OCTOBER

A Year's Care of Bower Bearings—Illustrated

"Bower Bearings never need adjustment"

BOWER

ROLLER BEARING CO.
Detroit Michigan

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Oakland

The Sensible Six

Sturdy as the Oak

A Great Car from every standpoint—that's the country-wide verdict on the new Oakland *Sensible Six.*

It's a big car—a roomy car—a car of *sensible* operating cost—one that any member of the family may drive with ease, pleasure, comfort and safety.

Its performance is little short of astonishing. On the hills or in bad going the powerful, valve-in-head motor climbs and pulls in a way that delights even the veteran driver.

And in easy-riding quality, the *Sensible Six* is a revelation. The long, semi-elliptic springs and oversize tires smooth out the roughest going.

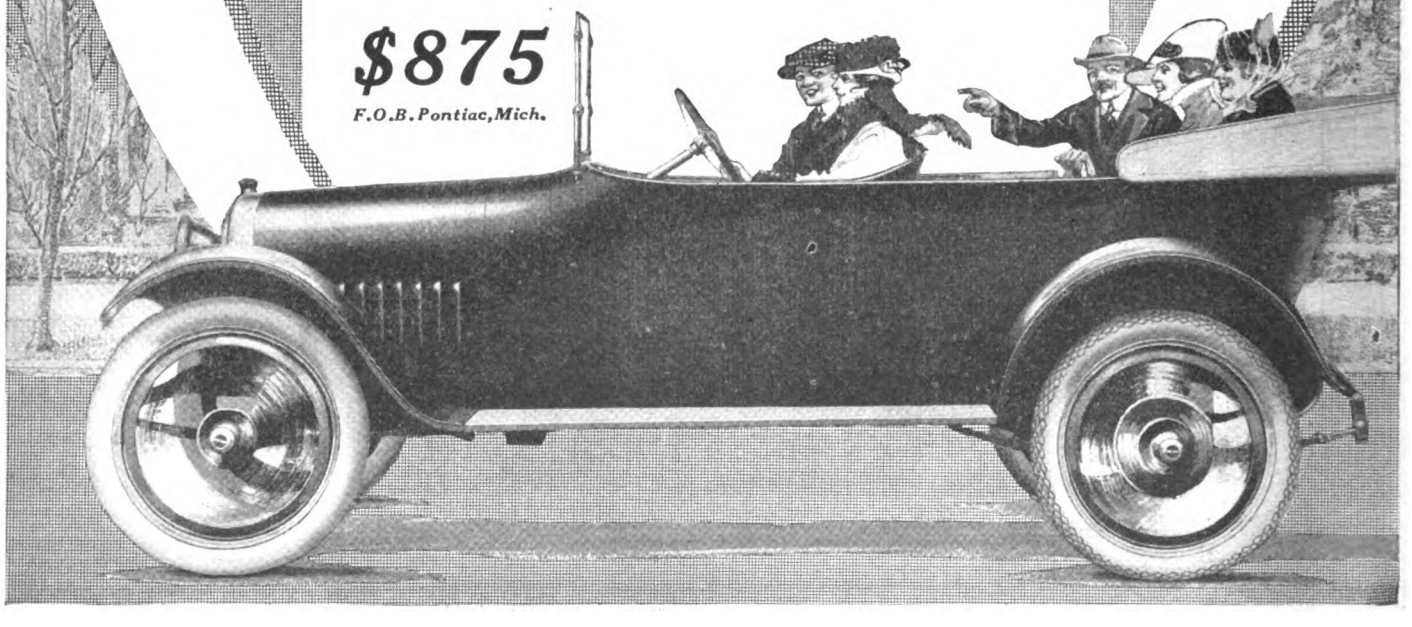
From every standpoint the *Sensible Six* is a *great big value* at the price. Send for our new booklet.

The *Oakland Eight* at $1585 is a big, powerful 7-passenger touring car for those who demand the utmost in speed, flexibility, and luxurious appointments.

(8)

OAKLAND MOTOR COMPANY
Pontiac, Mich.

$875
F.O.B. Pontiac, Mich.



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Spark AC Plug
America's Champion







The Standard Spark Plug of America

THE ambition of every maker is to have his plugs selected as standard equipment on the best makes of cars.

All have an equal chance to win this honor. The manufacturers of these "Cars of Quality" only make their choice after exhaustive tests, based on actual performance. "A survival of the fittest."

AC plugs are regular equipment on the cars listed in the opposite panel—

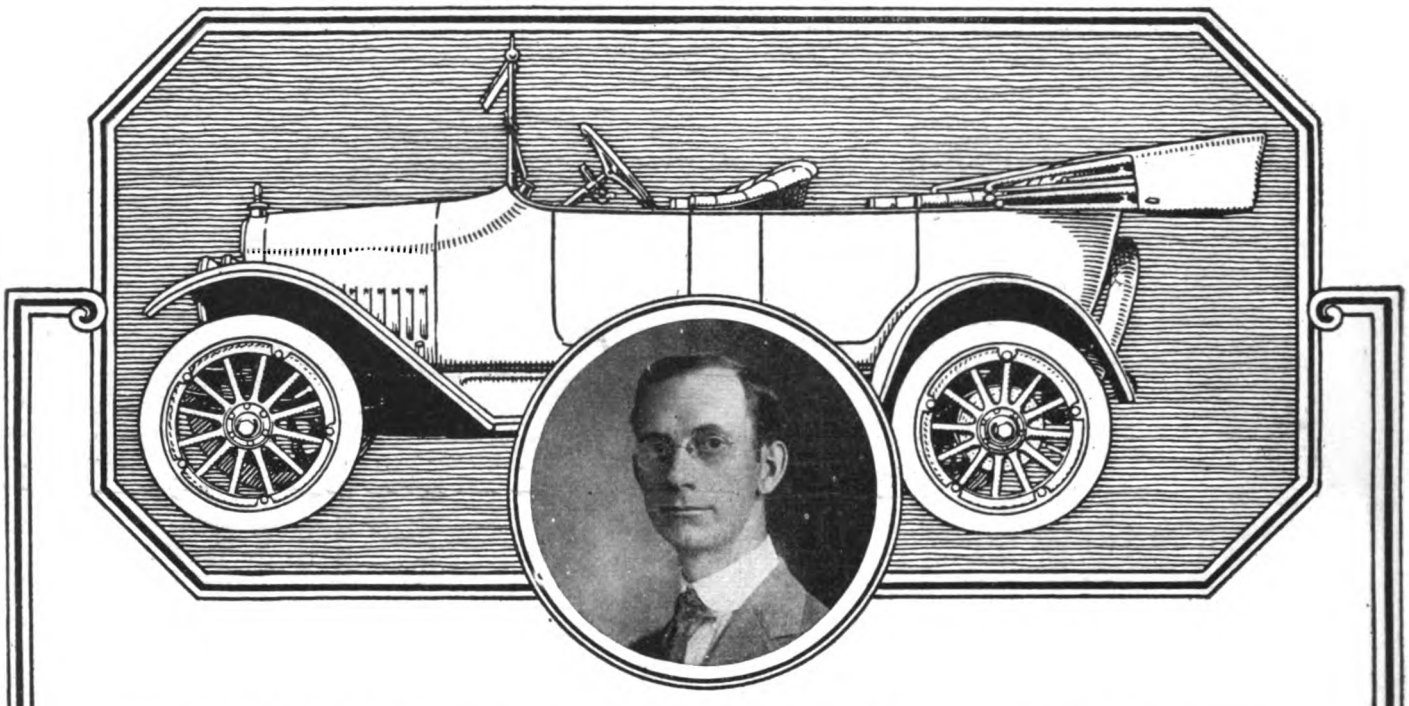
They met the tests. Don't experiment. These leading manufacturers have done that for you. Follow a safe lead. Use the plug with AC *burnt into the porcelain.*

AC Spark Plugs are standard equipment on the following cars after eliminating competition.

Packard	Buick
Pierce-Arrow	Oakland
Cadillac	Oldsmobile
Marmon	Jeffery
Hudson	Daniels
Chalmers	Sandow Truck
Hupmobile	Federal
Chandler	G. M. C.
Haynes	Gramm-Bernstein Truck
Chevrolet	KisselKar
Dort	Palmer-Moore
Cole	Murray
Reo	Bour-Davis
Paige	Premier
Peerless	Knox
Dodge Brothers	McLaughlin (Canada)
Stearns-Knight	Monroe
Saxon	Netco Truck
Stutz	Moreland Truck
National	Pilot
Velie	Crane-Simplex
Jackson	Singer
Apperson	Stephens
Davis	United Truck
Detroiter	Wilcox Trux
Paterson	Jordan
McFarlan	Liberty
Westcott	Signal Truck
Scripps-Booth	Republic Truck
Lexington-Howard	Sterling Truck
Chase Truck	
Brockway Truck	

CHAMPION IGNITION CO., Flint, Mich., U. S. A.

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J. W. McKee sold One Hundred Sixty-four Maxwells last season in Laurens, S. C. Population Four Thousand Eight Hundred and Eighteen

THE other day a man came to the Detroit office and placed an order for a trainload of Maxwell Cars. He wanted them quickly—and at the time of writing this advertisement he was still in Detroit trying to secure freight cars to handle the shipment.

"I've simply got to have them, or lose sales," he said. One would naturally imagine that this man was a dealer in one of the largest cities.

But it was Mr. McKee of Laurens, South Carolina, a town of only 4818! Buying Maxwells by the trainload.

That's what he is doing this year. His last season's record was pretty fair.

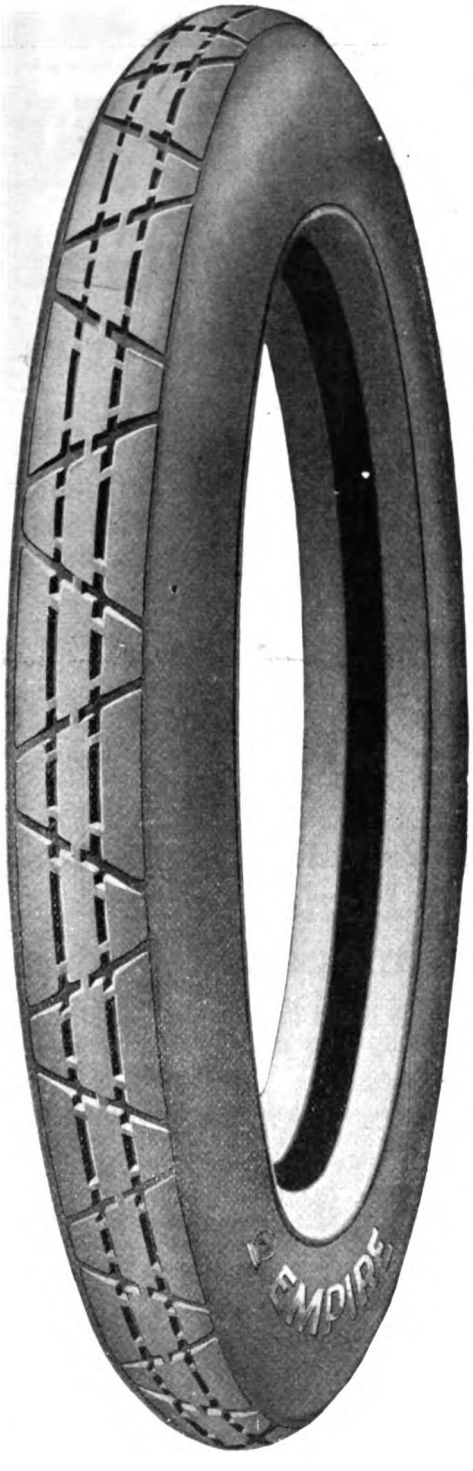
We have several thousand dealers who find that the Maxwell sells easily. They are themselves sold on the car—they believe it is the best value on the market—and their prospects are made to feel the same way.

They are a good class of business men. We try to select our dealers in keeping with the care used in building our car. We produce a quality car—we want high character representation.

If your territory is open we might find that you are the right man to represent the Maxwell line. It wouldn't hurt to let us hear from you anyway. Tell us all about yourself.

MAXWELL MOTOR COMPANY, INC.
DETROIT, MICHIGAN

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Low Mileage Cost, Satisfactory Returns

Lowest cost per mile is argument enough to sell a tire to any motorist living. Most tires claim lowest cost, but the one that actually produces it is the tire for you to handle.

Empire Tires

do actually give more miles per dollar than any of thirteen other leading tires. Read this table—it is authentic, based on the adjustment basis of each tire—34 x 4 size.

	Cost per Mile	List Price		Cost per Mile	List Price
Empire Red	**.0062**	**$31.45**	7th Tire	.0069	$34.60
Empire Gray	**.0064**	**25.75**	8th "	.0067	33.85
1st Tire	.0064	22.40	9th "	.0072	29.10
2nd "	.0064	22.40	10th "	.0087	35.10
3rd "	.0064	22.40	11th "	.0088	24.20
4th "	.0070	24.55	12th "	.0069	35.20
5th "	.0064	22.40	13th "	.0074	26.20
6th "	.0075	26.35			

Not only do Empire Tires equal any others in low mileage costs, but excel in long profits. Empire Tires appeal to the eye and are a permanent advertisement for you. They are continuously advertised.

Empire Red Tires are adjusted on a 5000-mile basis. Empire Gray Tires are adjusted on a 4000-mile basis.

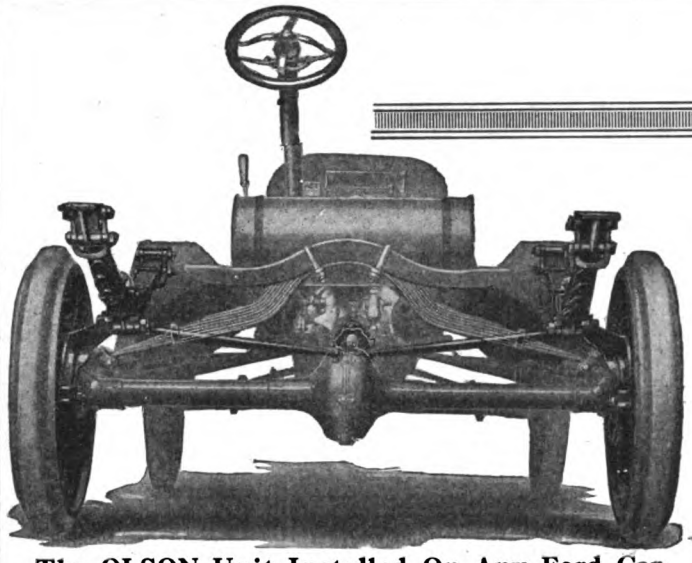
Write or wire today for our unusual proposition.

EMPIRE TIRE AND RUBBER CORPORATION
Home Office and Factory, Trenton, N. J.

BRANCHES AND OFFICES:

Boston	Buffalo	Chicago	Detroit	Newark
New York City	Philadelphia	Pittsburgh	Los Angeles	Minneapolis

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The OLSON Unit Installed On Any Ford Car

OLSON Dealers Get Immediate Deliveries While Others Wait

All over the country OLSON Dealers are **ready to deliver for $65,** the same service that others are trying to sell for more than $300, after indefinite periods of waiting.

It may take the farmer and the grocery man, or any of the hundreds of other prospects for units that convert Ford cars into ton capacity trucks, a long time to make up their minds to buy—but when they do, *they want immediate delivery.*

That's how OLSON Dealers—always ready to give immediate service—

Close The Ready-Made Business Others Can't Handle and Your Own Big-Time Sales Besides

The OLSON Unit, for *$30* and *$65* opens up a big new field that other salesmen can't touch. It makes up the mind of the thousands wavering in their decision to buy,

The value of the Ford car as a ton truck is as widely known as the car itself. Thousands of sales are to people already sold—and the closing argument is *price.* OLSON Dealers can talk price big. They put over sale after sale at *1/5 and 1/10 the prices of competitors* —and they do it solely on price, because all the units are about equally efficient workers.

Write For Full Details Today

There's a lot to be known about OLSON Units that every dealer after profits should know. They are the profit-proving facts that sign up new territory every day. *Write now,* while our answer may mean money to you.

SWEDISH CRUCIBLE STEEL CO.

Factories
Detroit, Mich., U. S. A.
Windsor, Ont., Canada
Address Wheel Dept.

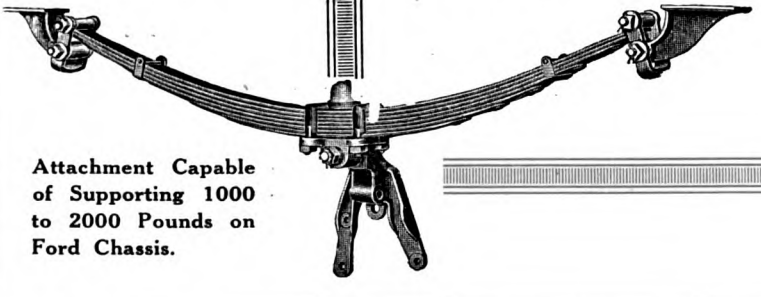
Price Complete Only

$65

F. O. B. Detroit

$30

F. O. B. Detroit



Attachment Capable of Supporting 1000 to 2000 Pounds on Ford Chassis.

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When Your Back Wheels Spin in the Mud—

—or snow, on ice, or any slippery place, all you have to do is to get out your

Easyon Chains

snap them on over your tires—and you've got traction.

These are the ideal traction chains. They have no equal for emergency use. They can be attached **after you get into difficulty.**

They are "friends in need"—life savers.

They cost little—are carefully designed to prevent scratching wheels or harming tires—and are packed in small bag, easy to stow away in a handy place.

PACKED 8 IN A BAG—4 FOR EACH WHEEL
Made in three sizes

Small—Fit 3 or 3½-inch tire, price.....$3.00 Per Set
Medium—Fit 4 or 4½-inch tire, price..... 4.00 Per Set
Large—Fit 5 or 5½-inch tire, price..... 5.00 Per Set

Shipped anywhere and if not satisfactory and as represented, we will gladly refund purchase price

WOODWORTH MFG. CORP.

Niagara Falls, N. Y. and Niagara Falls, Ontario

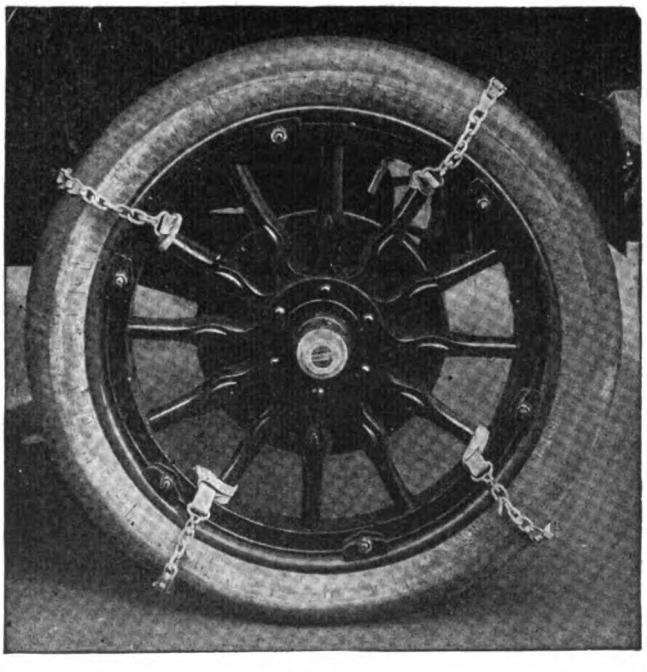
[Easy on chains—on or off in a moment; grip like a mud hook; ride like a bare tire.]



TRUCK CHAINS

DEALERS merely set up this free display stand and collect their profits on resulting sales. Why don't YOU do it?

Small sizes fit tires no larger than 3 in. Set of 8.....$4.00
For 3 in. or 5 in. tires. Set of 8 6.00
For 5 to 7 in. tires. Set of 8.. 8.00
Small dual chains for tires, smaller than 4 in. Each $1.25. Set of 8.....10.00
Large dual chains for tires larger than 4 in. Each $1.50. Set of 8.....12.00



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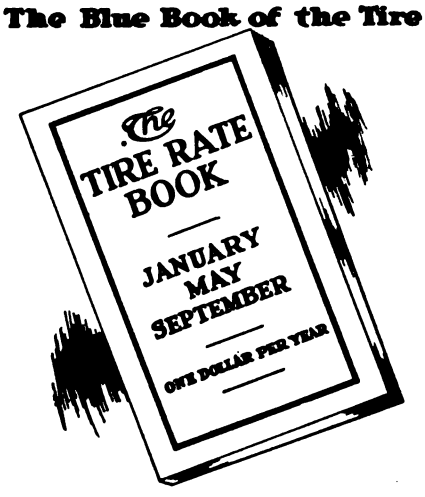
Suppose You—

were called on the phone and asked to quote price on a 35 x 4½ tire of a maker whose product you were not familiar with? Could you afford to waste your time, and the time of your customer, by hunting for that maker's price list—and maybe not being able to find it?

Certainly not!

For your convenience we have compiled the prices of all the leading tire manufacturers' products in a handy pocket size book (size 4¾ x 7½), and you will agree with upwards of 7500 dealers and tire salesmen that it is absolutely an indispensable aid to the successful conduct of the tire selling business.

"The Blue Book of the Tire Trade"



In addition to all of these revised pneumatic and solid tire listings The Tire Rate Book includes fourteen pages of car listings (all models from 1913 up to and including 1917) with accurate information bearing upon tire and rim sizes.

If you want tire size and rim style of the Alco, 1913 model, it is in The Tire Rate Book. Every other make (whether it is active or obsolete) is there. The information may be worth dollars in profits to you every day.

Other features are the "Standard Telegraphic Code," inflation tables, a table of metric sizes and their equivalents, etc., etc.

Important changes in tire prices will be announced by many manufacturers on or about Jan. 6th. These changes will all be featured in our January edition. Send your subscription now.

Order by Coupon or by Letter

The Tire Rate Book (Published by Motor World),
239 W. 39th St.,
New York City.

Enclosed please find $..... for ..... subscriptions, beginning with the January, 1917, issue.

Name .....

Address .....

Subscription price, 50 cents per year—January, May and September issues.

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EUREKA
RIM COMPRESSOR

for removing and replacing automobile tires used on demountable rims of the transversely split type.
The quickest and most efficient rim compressor ever made.

SEEING IS BELIEVING

Every reader of these advertisements, and especially Dealers and Jobbers who are interested in automobile tools of high selling value, must be sure not to miss seeing the performance of the EUREKA RIM COMPRESSOR demonstrated at the Automobile Shows at New York and Chicago.

At the New York Show (January 6 to 13, inclusive), the EUREKA RIM COMPRESSOR will be demonstrated in Space D-84 on the Fourth Floor of the Grand Central Palace.

At the Chicago Show (January 27 to February 3, inclusive), the demonstration can be seen in Space 19, Armory Balcony.

We want you to notice more than the quickness and directness with which tires can be removed and replaced with the help of the EUREKA. We want you to notice, as well, the excellent materials and workmanship we have put into this tool. We want you to notice the specially devised ends which operate on the rim, simply and effectively, doing away with the necessity of using clamps or adjustment screws, and protecting the rims and casing against injury.

Notice the long lever and eccentric joint which gives you the tremendous leverage that makes the job so easy. Notice, too, that the lever locks when in alignment, and cannot slip while you are removing tires.

Take all these points into account and then ask yourself, "Isn't this the line to sell?"

Price $3 Guaranteed



The Eureka Rim Compressor, Inc., Addison, N. Y.

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Every Man Who Sells, Owns or Repairs Motor Cars Needs This Wonderful Book

IT is the most illuminating and instructive work of its kind ever published. Indispensable to the novice and the expert.

It is complete, splendidly written and printed. Handsome leather binding. It is most aptly named because it treats exhaustively of the mechanics of the automobile — from the single to the eight cylinder. It makes hitherto complex subjects as simple as A. B. C.

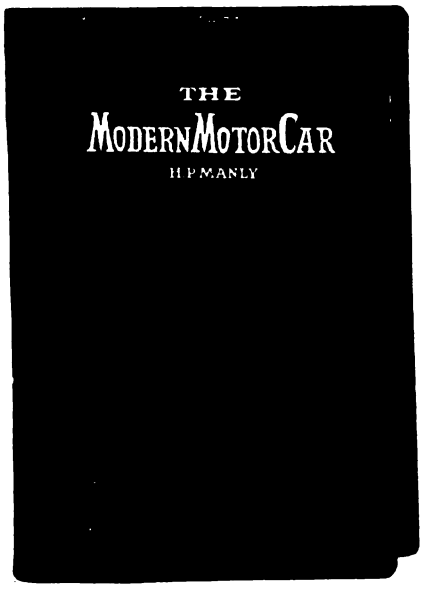
Design, construction, care and adjustment of cars considered fully. Over 400 separate troubles are diagnosed, and definite remedies prescribed.

Electrical sections particularly interesting and instructive. The reader quickly learns every worth-while detail of starting, lighting and ignition.

Book Department

The Motor World Publishing Co.

239 West 39th Street, New York



512 pages, 217 illustrations; bound in full leather, flexible covers.

A Few of the Things for which Simple Directions are Given

Adjust any make or model of carbureter.
Put electric machinery together right.
Make a noisy engine run quietly.
Trace wiring and locate breaks.
Time poppet, sleeve or rotary valves.
Locate grounded, short circuited or worn wires.
Keep transmissions from coming out of gear.
Locate starting and lighting trouble by looking at the ammeter.
Wire any make, type, age or model magneto.
Clean a cooling system while on the car.
Wire master vibrators.
Scrape bearings.
Time a magneto.
Restore scratched cylinders.
adjust vibrators.
Vulcanize tires.
Stop water leaks.
Regulate a cut-out.
Charge batteries.
Fit piston rings.
Find the polarity of wires.
Test engine oils.
Make battery liquid.

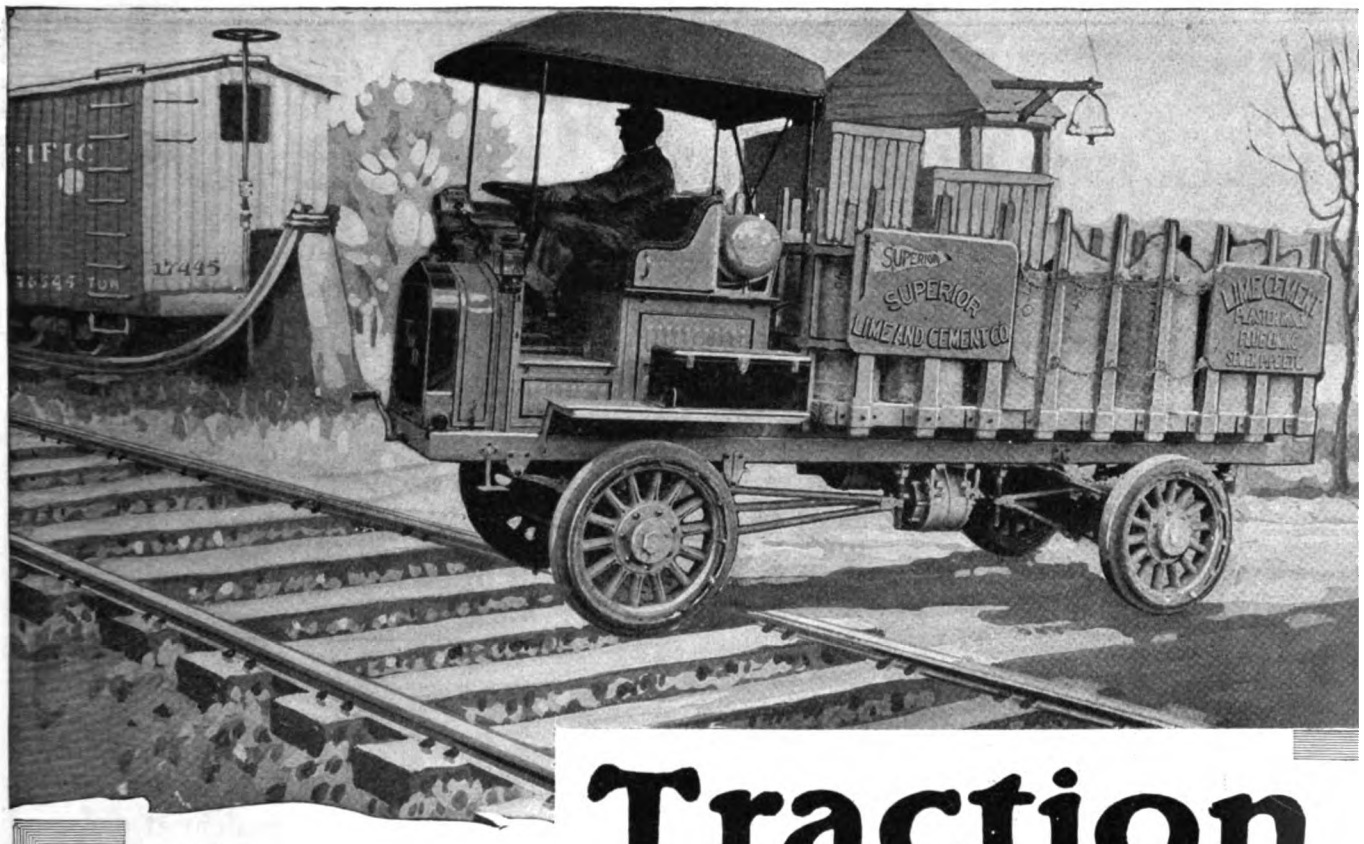
Some New Ideas

Electric lighting and starting.
Vacuum fuel feed.
Rotary valve engines.
1915 magnetos.
Electric brake.
Carbureter heating.
No history.
No out-of-date work.
No padding.
Eight cylinder engines.
Edison storage battery.
Directions for oiling daily, weekly, semi-monthly, and each 1,000 and 2,000 miles.
Two-point ignition.
Sleeve valve engines.
1915 carbureters.
Electric gear shift.
Kerosene, alcohol and benzol fuels.
Instructions in detail for 32 models of carbureters.

Sent Prepaid on Receipt of Price

$2.50

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Traction In Every Wheel

IN city or country, there are often bad pieces of road that must be traversed by a truck, and delays are expensive.

FWD Trucks

with traction in every wheel are able to go over roads impossible to rear drive trucks.

Power in the front wheels enables them to lift themselves over obstructions instead of being pushed over by the rear wheels.

Traction in every wheel means also greater efficiency on smooth city streets, less wear on tires and general dependability.

Dealers who desire to build up a permanent business with customers who buy trucks for their investment value will be considered in open territories. To such we will gladly send details of our dealers' agreement, prices, discounts and terms.

Write for New Illustrated Catalog

FOUR WHEEL DRIVE AUTO COMPANY, Dept. P Clintonville, Wisconsin

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More Than 1200 in Use

Hundreds of letters commend the good results this simplified system of accounting has accomplished for Dealers and Garage Owners.

Have you a satisfactory accounting system? Is it simple? Is it efficient? Is it easy to understand and operate? Was it designed by experts who know and appreciate the details of *your* business?

If not, then you should get a Motor World Simplified System at once. You should get started with it the first of next month.

This system is operated with but three forms—all in one book.

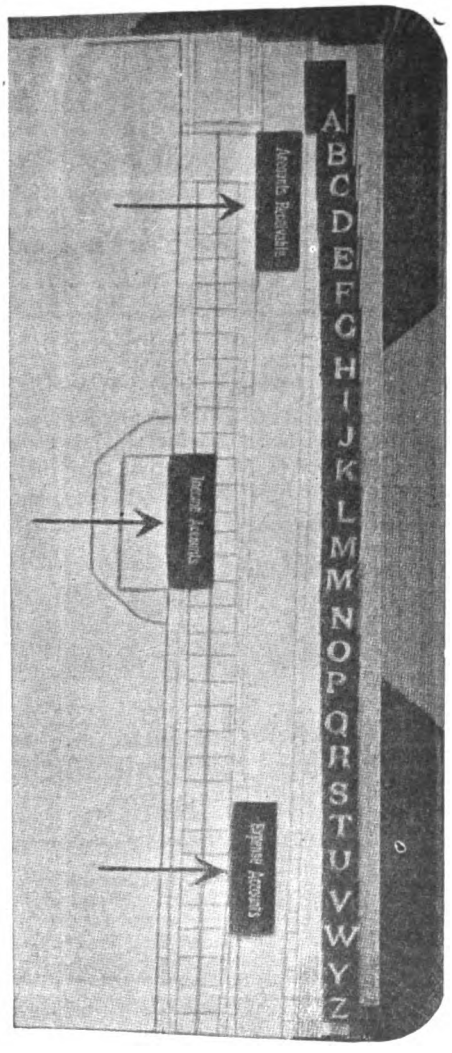
ONE BOOK IS ALL YOU NEED.

The complete system includes the loose leaf binder shown herewith, the index set, and 100 each of form sheets Nos. 1 and 2 and 200 No. 3. These forms are, respectively, "Income," "Expense" and "Accounts Receivable." The price is $12.00 net, f.o.b. New York.

This price also includes a 36-page booklet wherein the operation of the complete system is described in detail. Price of the booklet (if purchased without the system) is one dollar.



THE ONLY BOOK needed in the system is shown here. It is 14½ x 11½ in. The picture at the right shows the index division tags. Form 1 goes under the center arrow. Form 2 under the lower arrow and Form 3 under the upper arrow.



We urge every Dealer and Garage Owner to act upon our suggestion that he order a complete system at once. Get started with it the first of next month. More than a thousand firms in the trade will support this recommendation. They are using it. They know it is the best, simplest and most practical accounting system ever devised for dealers and garage owners.

The low price quoted is made possible through quantity. It is not a plan for Motor World to make money, but to get our subscribers started on a better way to "know their business," and to assist *them* in making more money.

When sending your order address

SYSTEM DEPARTMENT,

Motor World

239 West 39th Street New York City

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Clean Up on Sales of This Liquid Sunlight

ZIT takes off everything except a very heavy coating of mud and leaves a hard, dry finish that makes a car shine as if it had been dipped in the fountain of youth.

ZIT THE AUTOMOBILE DRY WASH

has made good wherever tried. It won't freeze, evaporate or burn. Restores the elasticity and keeps the finish from checking and cracking. Good for furniture as well as cars.

If you want a sure seller, stock ZIT. Dealers who have never tried it should. Write today for further information.

Westfield Chemical Company
50 Main Street, Westfield, Mass.



Cooper Automobile Accessories

A limited line, but quantity production of the few items gives high quality at a minimum cost.

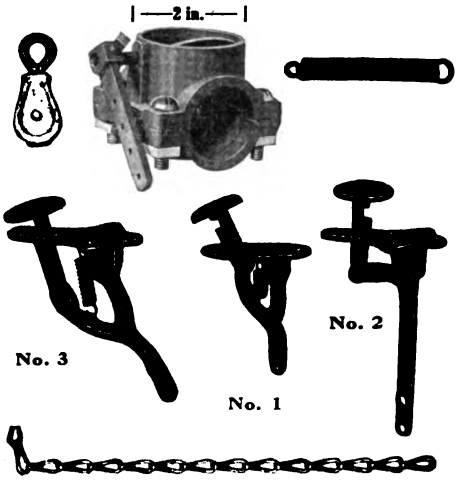
In addition to the Wheel Puller for Fords and the Cut-Out Outfit illustrated here, the line embraces Foot Accelerators and Cam Shaft Bearings for Fords, Chain and Galvanized Cables, Pressed Steel Pulleys, Cut-out Valves, Locking Foot Pedals and Fender Braces for Fords.



Finished in Black Rubberized Enamel and Packed in Attractive Carton

Cooper Wheel Puller for Fords

A small and light but strong and efficient device. Made of malleable iron. Furnished either with lever or set screw. The side adjustable feature insures exact fit and eliminates the possible stripping of threads.



Cooper Cut-Out Outfit

In several sizes to fit all cars. Choice of three pedals. Pipe opening and flange face ground to insure accurate and air-tight joint. A quality product throughout.

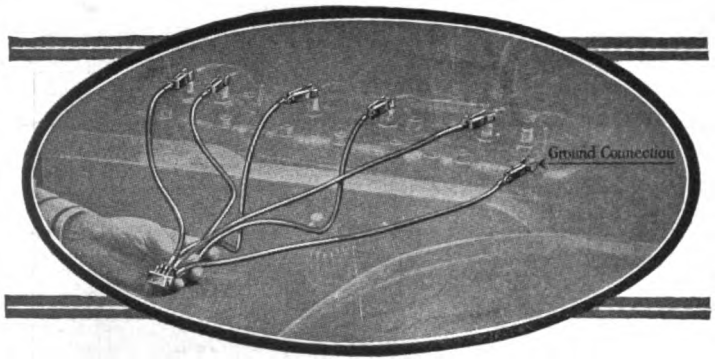
Made by the

C. & E. Manufacturing Co. 411 South First Ave. Marshalltown, Iowa

Exclusive Sales Representatives—The Fulton Co.

727 National Avenue, Milwaukee, Wis.

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THE EDGERTON MOTOR TESTER

Positively Eliminates the Uncertainties of Guesswork in Locating Motor Troubles

WITH the EDGERTON MOTOR TESTER a novice can locate engine trouble instantly and unfailingly, irrespective of the number of cylinders involved. With it, cylinders can be tested individually or collectively. By isolating the cylinders it presents an opportunity to test each one under actual operating conditions. The cylinder under test drives the dead cylinders; even with the throttle wide open the motor does not race.

IT BURNS OUT THE CARBON

In approximately thirty minutes the Edgerton Motor Tester will burn the carbon from the cylinders and exhaust valve seats, thus eliminating the carbon knock common to high compression motors, and reducing valve regrinding to a minimum.

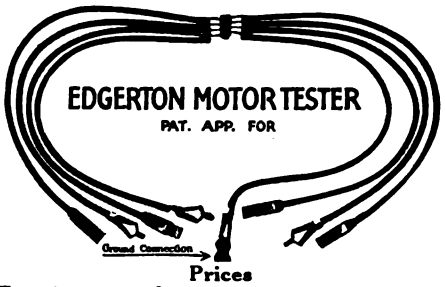
WHAT IT IS

The Edgerton Motor Tester consists of several high-tension cables flexibly and electrically connected to a central member at one end and having at the other end of each cable an attachment for connection to a ground on the motor under test; also to the binding posts or terminals of the spark plugs of the motor.

It is guaranteed free from defective material and workmanship for twelve months.

JOBBERS AND DEALERS should stock this tester at once as it is already extensively used and a universal demand for it is inevitably coming. There is a highly satisfactory profit in it.

GARAGEMEN AND REPAIRMEN should install it as a part of their equipment as it is the one scientific method of locating missing explosions, weak cylinders, knocking bearings, and for making carburetor adjustments. With it one man can do the work of several and in a fraction of the time.

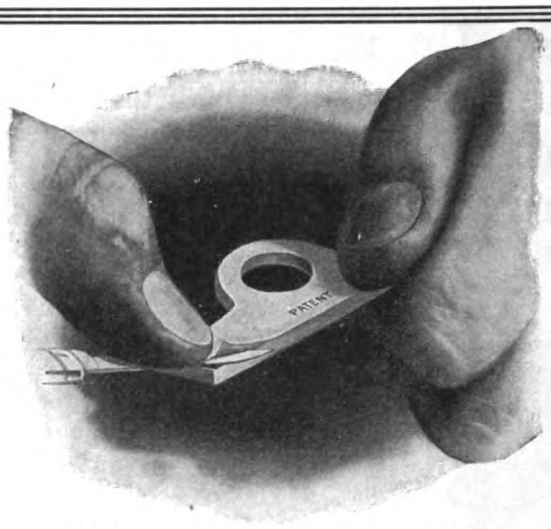


Prices

For 4 or 6 cyl. motors	$5.00
For 8 cyl. motors	6.75
For 12 cyl. motors	9.50

Trade Prices Quoted on Application

R. G. EDGERTON CO.
SOLE MANUFACTURERS
SUFFOLK, VIRGINIA



INVESTIGATE LAMINUM

THE MULTI-PLY, ONE PIECE SHIM FOR SPLIT BEARINGS

HANDY SIMPLE ACCURATE

Anything that will save time is worth looking into.

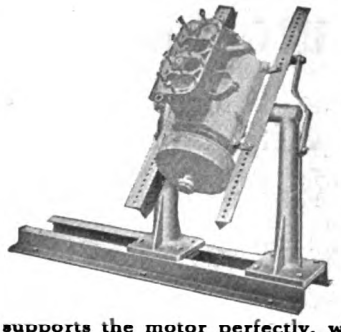
You will find it pays to use Laminated shims. They combine the good qualities of solid and loose leaf shims and have none of their troublesome features. Besides they are quicker, more accurate, and make a good tight bearing.

Laminum is made up of thin leaves of hard brass (either .002" or .003" thick) held together in a compact piece by a metallic binder. We furnish it in stock sheets, in various thicknesses. It can be stamped into desired shapes like sheet brass. We will stamp out bulk orders to suit your needs. Your jobber can furnish you with sizes and shapes generally in demand, such as shims to fit Ford engines. Write him at once.

Send for a sample.

LAMINATED SHIM COMPANY

New York, 533-541 Canal St.; Detroit, 2113 Dime Bank Bldg.; San Francisco, F. S. Peterson, 60 Pine St.; St. Louis, 1411 Chestnut St.



THE MANLEY "EVERY WAY" ENGINE STAND

supports the motor perfectly, while allowing the workman to reach every portion of it with ease and accuracy.

The "Every Way" can be adjusted to every position in a circle—100 positions if desired—but the three most convenient are the Horizontal Position for working on valve mechanism and generally around the engine; the 45-degree Position (shown in cut) for cleaning carbon, grinding in valves, etc.; and the Inverted Position for taking up crankshaft, connecting rod, bearings, etc.

In each position the engine is locked rigidly by two side braces. The "Every Way" supports the engine solidly. It will never become shaky, and should last a lifetime without repairs.

For the Factory motor assembly department no other stand has been brought out that can be compared to the "Every Way for" efficiency and convenience.

The United Engine & Mfg. Co.
"Pioneers in Garage Equipment"
Hanover, Penn.

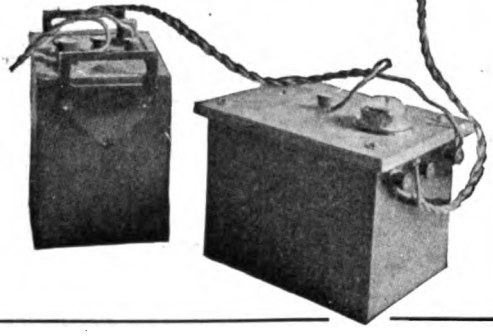
THE Manley SHOP AND GARAGE EQUIPMENT

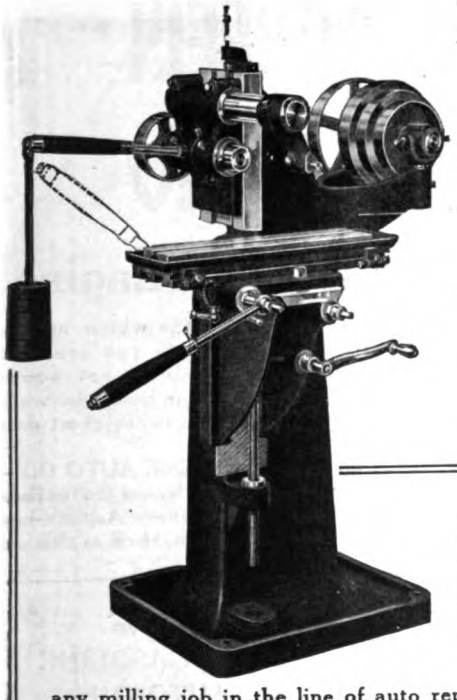
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The BLITZEN rectifier type R-1000 fills a need that all private users of storage batteries, small charging stations, garage and boathouses have long felt for a low-priced rectifier that is inexpensive to operate, as well as safe, durable and absolutely reliable.
Anyone can attach it and it will operate without attention. Each rectifier will give 250 to 1000 hours continuous operation without recharge.
It will charge a 6 volt, 60 A. H. battery at a cost of 25 cents, when current costs 10 cents per kilowatt hour. It consists of a metal tank 9 in. by 7½ in. by 7 in. with a slate cover.
Type R-1000 will charge a 12 (or two 6) volt battery at 3 amperes, and a 6 volt battery at 5 amperes. For use on 110 volt 60 cycle A. C. Consumes 1½ amperes from the line. Shipping weight 20 lbs. Price, complete.....**$17.50**
We will replace any defective instrument returned to our factory (transportation charges prepaid) within a year of purchase.
We can furnish rectifiers for any purpose. Send for complete catalogue.

Clapp-Eastham Company
138 Main Street, Cambridge, Mass.



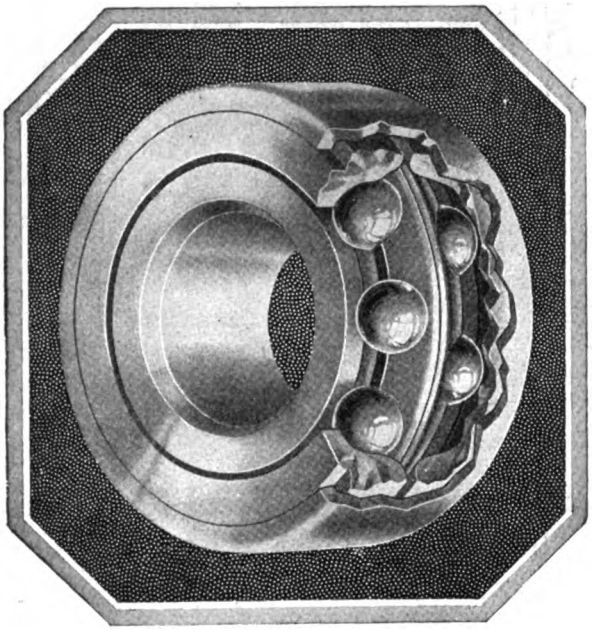


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The Whitney will take care of any milling job in the line of auto repairs. With it you can cut gears, cams, sprockets, do key-seating, straddle milling, profiling, slotting, slabbing, drilling, die sinking and countless other operations.
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Simply send a postal for Catalog No. 7

The Whitney Mfg. Co., Hartford, Conn.
Chains, Keys, Hand Milling Machines



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New Departure Ball Bearings have made good in the face of the severest competition with both foreign and American makes.

This success has been due in the main to *quality*—proper steels, accuracy and endurance in-built.

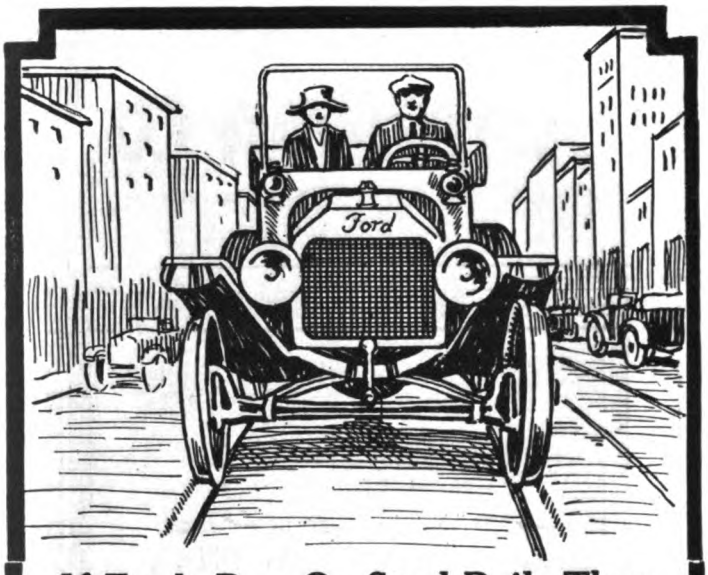
That is why New Departure Ball Bearings dominate—are in 80% of American car models—*cars of every price class.*

Whether owner, dealer, or manufacturer you should know what New Departure Ball Bearings mean to the automobile. Write for the "Brown Book."

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BRISTOL, CONN. DETROIT, MICH.

NEW DEPARTURE BALL BEARINGS

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W & C

The Original Double Arm Shock Absorber

Your Ford could sail along at speeds you seldom use if its road-bed were scientifically graded and the wheels ran on smooth steel rails. But the way of most Fords is bumpy, until W & C Shock Absorbers do the grading, and **supply a substitute for steel rails** that insures the kind of easy riding you find in high-priced cars.

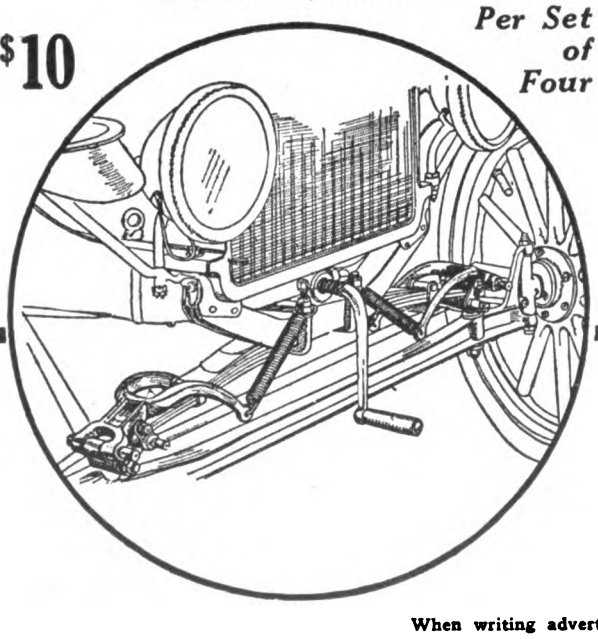
Order your W & C equipment now. It will take all the jolt out of winter driving. **Say "W & C"** to your dealer, or **write us direct.**

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$10 *Per Set of Four*



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(ready to use)

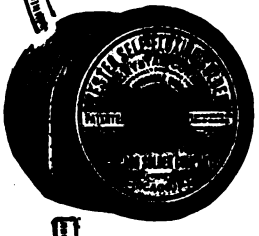


Kester Crystal-Core Solder

is a seamless tube of wire solder. The core is a soldering flux that flows as solder is used. CRYSTAL-CORE is especially adapted for AUTOMOBILE work. Tube is a series of cells. Each cell is filled with the proper amount of flux. Kester Crystal-Core Wire Solder is cheaper to use than solid wire or bar solder. No time is lost in preparing or applying the flux or acid.

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Use it for battery terminals, gasoline pipe and tank joints, electric light connections, radiator leaks, cracked fenders, speedometer flexible shaft, spark plug terminals and general garage use. Sold in coils of 1 pound, and on spools of 1, 5 or 10 pounds.



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Starts with the Engine

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LUNKENHEIMER GASOLINE ENGINE PRIMER



Makes starting easy in the coldest weather

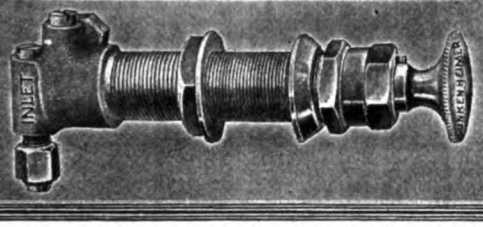
It eliminates the long continued whr-r-r-whr-r-r of the starting motor which kills the battery, as well as "spinning" the motor by hand, which exhausts the operator's strength and patience.

A stroke or two of the plunger puts a charge of atomized gasoline into the intake ports from where it enters the cylinders, giving a power impulse on the first turn.

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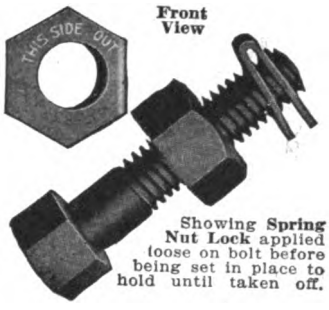
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Also valuable information pertaining to ignition systems, carburetors, magnetos, etc., etc. Valve setting is dealt with in detail, also indicator work, with numerous tables, useful rules and formulas, diagrams, and over three hundred illustrations.

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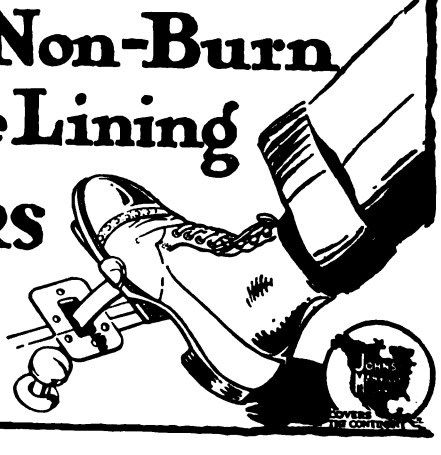


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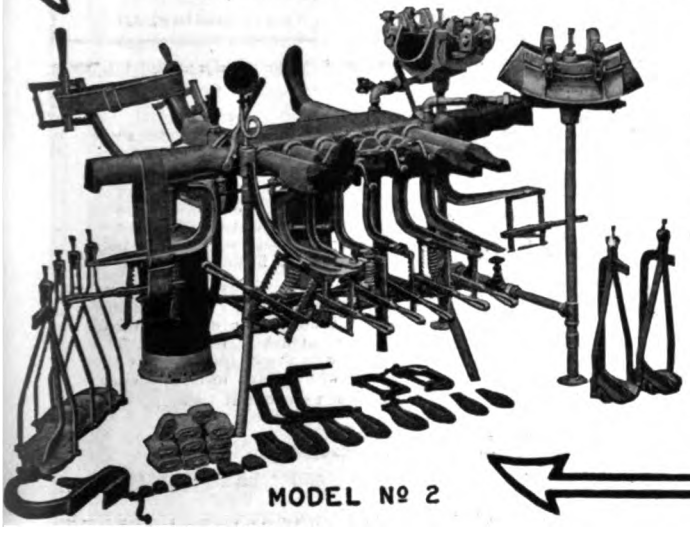
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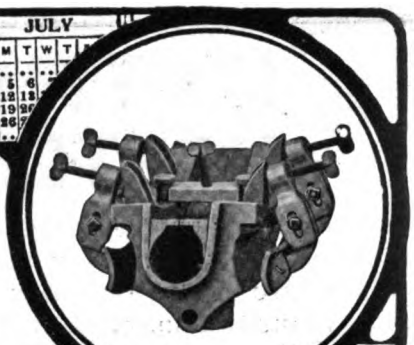
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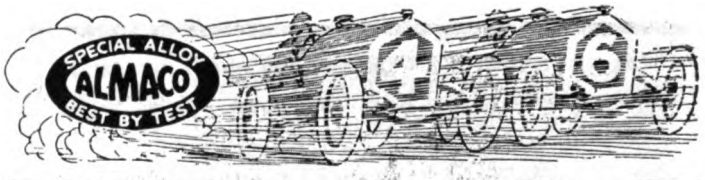
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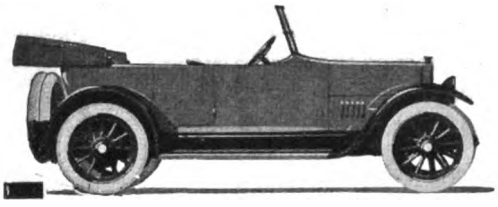
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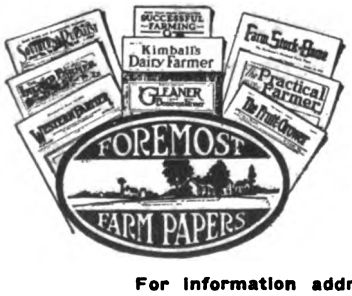
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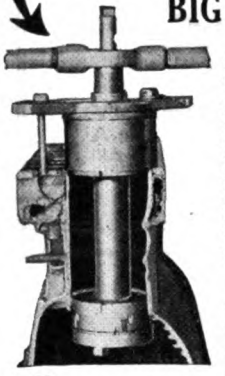
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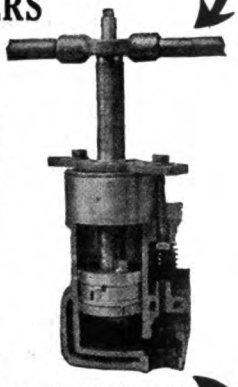
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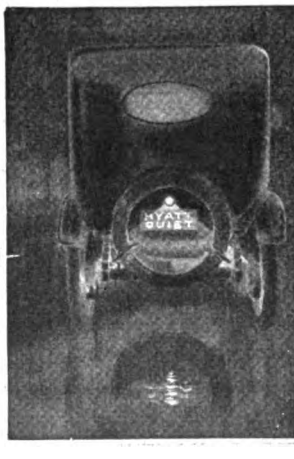
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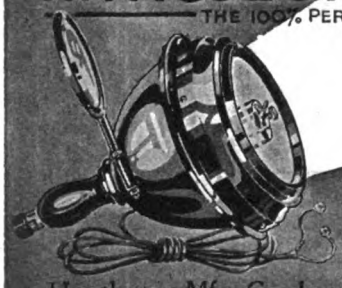
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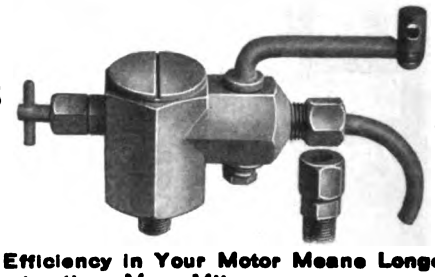
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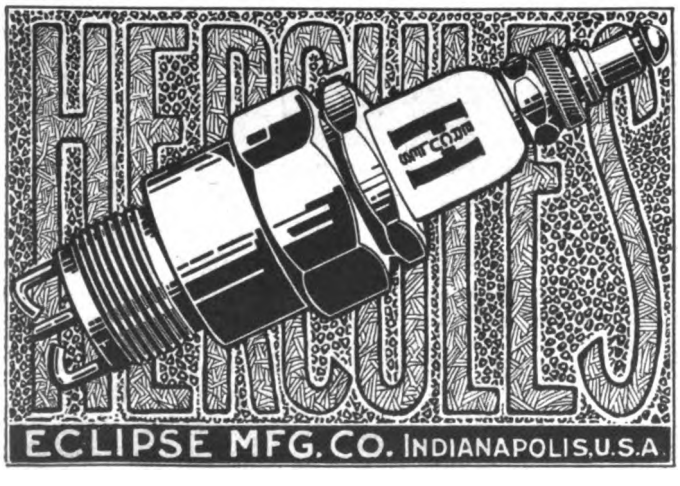


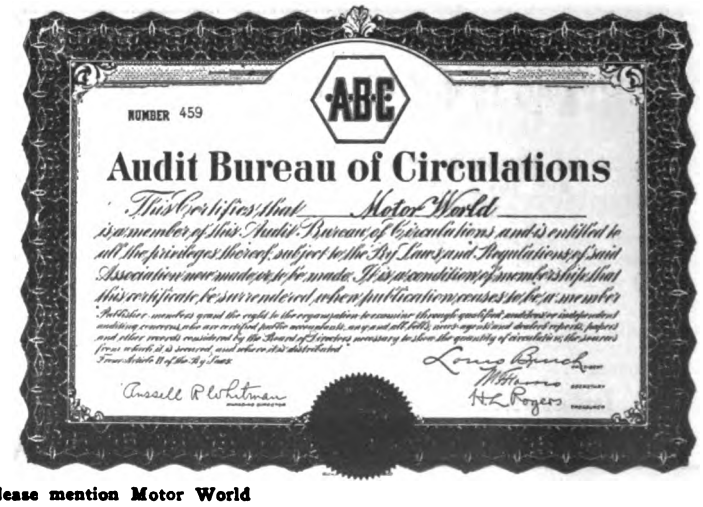
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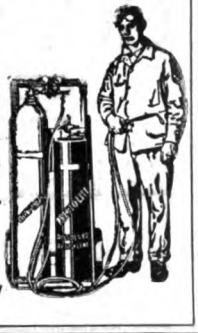
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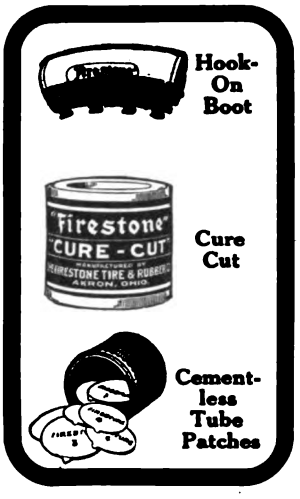
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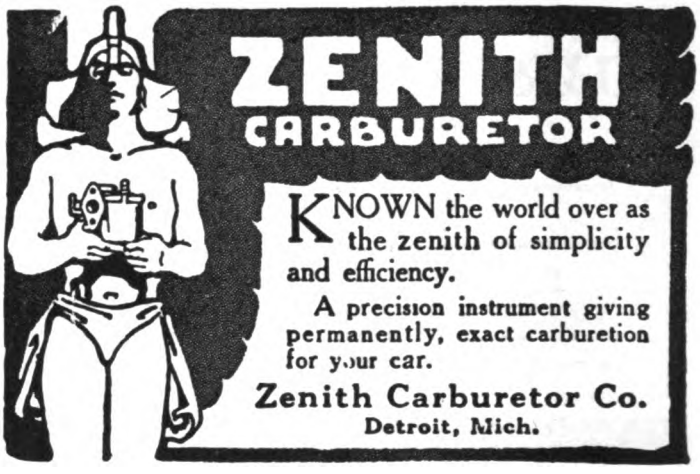
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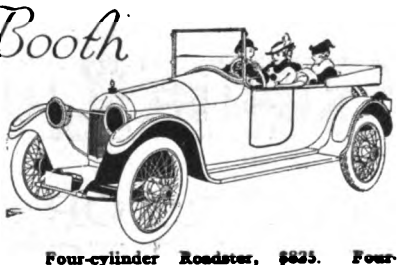
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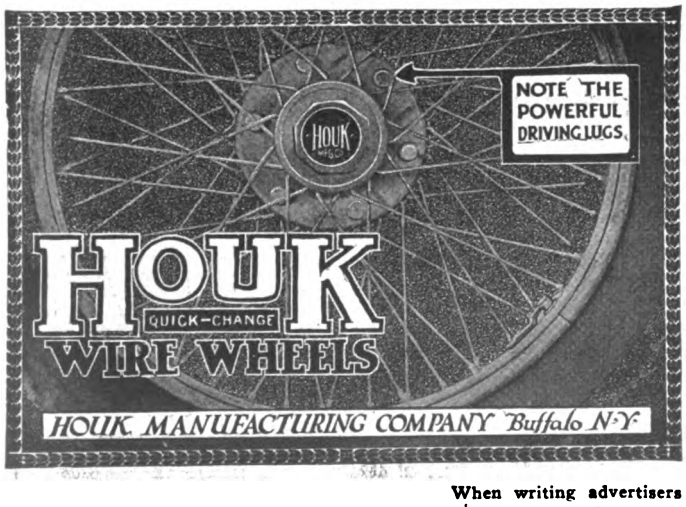
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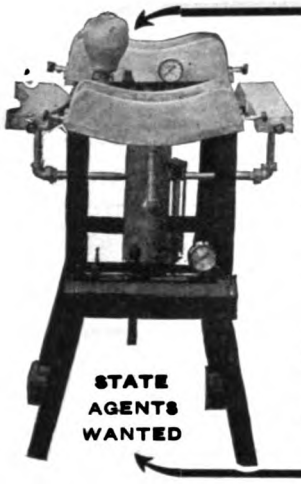
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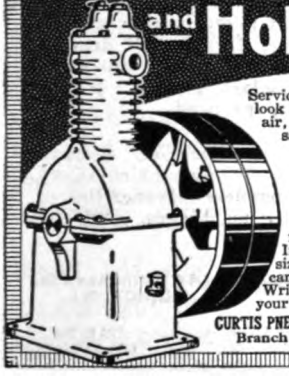
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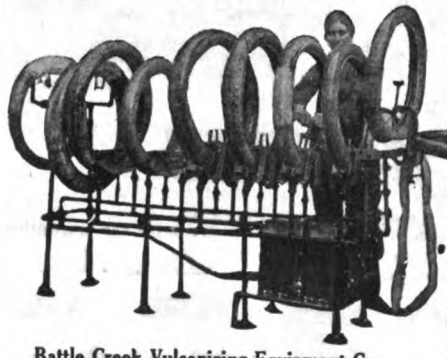
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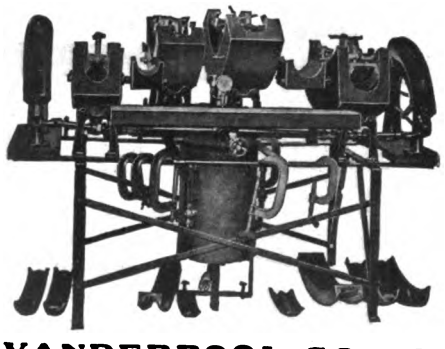
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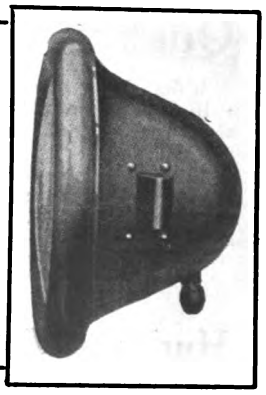
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Stoddard Dayton 9F	75.00	Great Western...	75.00
Overland Mod. 69.	75.00	Buick 17	90.00
		Peerless 40	100.00
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Peerless, 1906 to '13	Ohio—Hudson, 20 to 33
Stoddard-Dayton	Berdoll-Staver
Regal—Stevens Duryea	Krit 20—Atlas
Midland-Wayne-Welch	Mitchell, 1908 to '13
Henderson—Speedwell	Thomas, all models
Sterns, 30 to 60	Great Western—R.C.H.
Kissel 6—Matheson	Oldsmobile Special Ltd.
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31x3½	8.55	34x4½	16.15
32x3½	9.10	35x4½	16.80
34x3½	9.60	36x4½	17.25
31x4	11.95	37x4½	17.95
32x4	12.40	35x5	19.35
33x4	12.90	36x5	19.50
34x4	13.20	37x5	20.25

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31x3½	8.50	2.50	34x4½	16.25	4.00
32x3½	9.00	2.50	35x4½	17.00	4.15
34x3½	9.50	2.55	36x4½	17.50	4.25
36x3½	10.75	2.75	37x4½	18.00	4.36
31x4	11.75	2.90	35x5	17.50	5.00
32x4	12.50	3.20	36x5	18.50	5.00
33x4	12.75	3.25	37x5	20.00	5.20

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32x3½	5.25	1.50	35x4½	8.00	1.80
34x3½	5.50	1.60	36x4½	8.25	1.85
31x4	6.25	1.65	37x4½	9.50	1.90
32x4	7.00	1.60	35x5	8.50	2.00
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34x4	7.75	1.70	37x5	9.75	2.20

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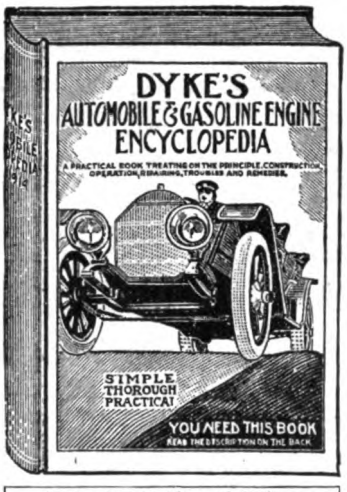
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(42)—Vulcanizing and Repairing Tires.
(43)—Digest of Troubles.
(44)—The Automobile Repairman.
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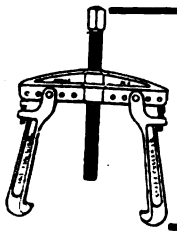


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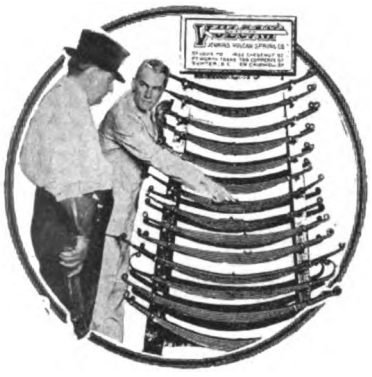
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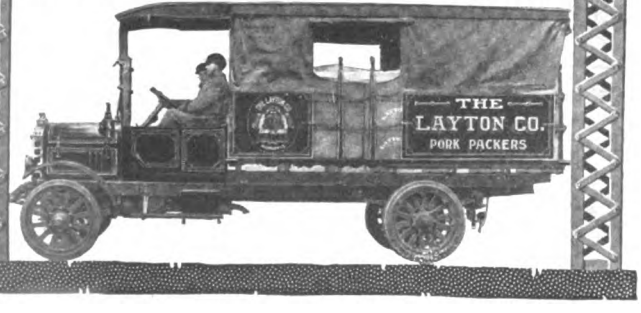
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Advertisers' Index

A

Ajax Rubber Co. ... 123
Akron Auto Garage Co. ... 110
Albertson & Co. ... 113
Aluminum Mfg. Co. ... 107
American Bronze Co. ... 110
American Electric Co. ... 115
Ames Co., F. A. ... 108
Anderson Steam Vulcanizer Co. ... 115
Arthur Vulcanizing Machine Co. ... 107
Automobile, The ... 110
Auto Parts Co. ... 111
Auto Pedal Pad Co. ... 123

B

Babcock Co., H. H. ... 72
Backus Novelty Co. ... 112
Batavia Rubber Co. ... 73
Battle Creek Vulcanizing Eq. Co. ... 116
Benford Mfg. Co. ... 114
Blake Signal & Mfg. Co. ... 123
Bosch Magneto Co. ... 111
Boston Blacking Co. ... 107
Bower Roller Bearing Co. ... 89
Bowser & Co., S. F. ... 125
Brown-Lipe-Chapin Co. ... 113
Brown Mfg. Co., J. W. ... 116
Brunswick Motor Car Co. ... 112
Bulter Mfg. Co. ... 110

C

Cadillac Auto Truck Co. ... 79
Cassidy, E. A., Inc. ... 115
Champion Ignition Co. ... 91
Chase & Co., L. C. ... 114
Chicago Auto Supply House ... 123
Chicago Fuse Co. ... 109
Chicago Solder Co. ... 104
Cincinnati Auto Specialty Co. ... 109
Clapp-Eastham Co. ... 103
Corbin-Brown Speedometer Co. ... 3
Crane Puller Co. ... 123
Curtis-Pneumatic Mach. Co. ... 115

D

Dayton Welding Co. ... 68
Delion Tire & Rubber Co. ... 111
Denby Motor Truck Co. ... Back Cover
Detroit Battery Co. ... 108
Disco Electric Starter Co. ... 111

E

Eclipse Mach. Co. ... 112
Edgerton & Co., R. G. ... 102
Eisemann Magneto Co. ... 71
Empire Tire & Rubber Co. ... 93
Eureka Rim Corp. ... 97

F

Fedders Mfg. Co. ... 113
Firestone Tire & Rubber Co. ... 114
Fisk Rubber Co. ... 2
Foremost Farms Paper ... 108
Four-Wheel Drive Auto Co. ... 99
Fried & Stonier Co. ... 113
Fulton Company ... 81 & 101

G

Gardner Governor Co. ... 116
Gibson-Hollister Mfg. Co. ... 115
Goodman Auto Body Co. ... 116
Goodrich Co., B. F. ... 84
Grant Motor Car Corp. ... 126
Grossman Co., Emil ... 111
Gulf Refining Co. ... 104

H

Hartford, E. V., Inc. ... 114
Hawthorne Mfg. Co. ... 112
Hill Pump & Valve Co. ... 74
Houk Mfg. Co. ... 114
Hurlburt Motor Truck Co. ... 115
Hyatt Roller Bearing Co. ... 111

I

Imp Carbon Chaser Corp. ... 112
Inter-State Motor Co. ... 113

J

Jenkins Vulcan Spring Co. ... 124
Johns-Manville Co. ... 106

Digitized by Google

Advertisers' Index

K

Kissel Motor Car Co. 108

L

Laminated Shim Co. 102
Lewis Electric Welding & Mfg. Co. 109
Liberty Motor Car Co. 109
Lunkenheimer Co. 105
Lyon Metallic Mfg. Co. 111

M

Majestic Motor Co., Inc. 110
Maxwell Motor Co. 92
Miller Rubber Co. ..... Front Cover
Moline Automobile Co. 108
Monroe Motors Co. 87
Mosler & Co., A. R. 110
Mossberg Co., Frank ..... 3rd Cover
Motor Age 115

N

National Assn. of Automobile Accessory Jobbers ... 4
National Auto Show 86
National Motor Car & Vehicle Corp. 65
National Rubber Co. 113
New Departure Mfg. Co. 103
New Era Spring & Specialty Co. 123
New Process Gear Corp. 116
Norma Co. of Am. 105

O

Oakes Co., The 115
Oakland Motor Co. 90

P

Pouvailsmith Corp 76
Perlman Rim Corp. 85
Prest-O-Lite Co. 113

Q

Quaker City Rubber Co. 116

R

Rayfield Carbureter Co. 66
Redee Mfg. Corp. 112
Regal Motor Car Co. 114

S

S. K. F. Ball Bearing Co. 108
Scripps-Booth Corp. 114
Selden Truck Sales Co. 125
Shaler Co., C. A. 78
Sheldon Axle & Spring Co. 113
Silvex Company 83
Sparks-Withington Co. 106
Splitdorf Electrical Co. 80
Spring Nut Lock Company 106
Stephens Motor 75
Sterling Motor Truck Co. 124
Stevens & Co. 110
Stewart-Warner Speedometer Corp. ..... 2nd Cover
Storm-O'Hair & Co. 109
Studebaker Corp. 1
Swedish Crucible Steel Co. 94
Swinehart Tire & Rubber Co. 108

T

Thurston Auto Supply 113

U

United Eng. & Mfg. Co. 102
Universal Car Equipment Co. 108

V

Van Cleef Bros. 108
Vanderpool Co. 116
Van Sicklen Co. 105
Victor Heater Co. 77

W

Waltham Watch Co. 67
Warner Auto Top Co. 116
Watson Wagon Wks. 82
Webber & Co., P. H. 104
Westfield Chemical Co. 101
Whitney Mfg. Co. 103
Woodworth Mfg. Corp. 95

Z

Zenith Carburetor Co. 114



Will save ALL waste and add to your profit

If you are trying to do without these two outfits, you are actually paying for them in what you are losing. You're only getting a small part of the business you might get and you're not making the profit you should even on that.

If you have one and not the other, you're like a fellow who would buy a suit of clothes without the pants—your equipment is not complete.

S. F. Bowser & Co., Inc.

Equipment for Handling, Storing and Measuring Oil, of All Kinds

FORT WAYNE, IND.

Sales Offices All Centers — Representatives Everywhere

G-20



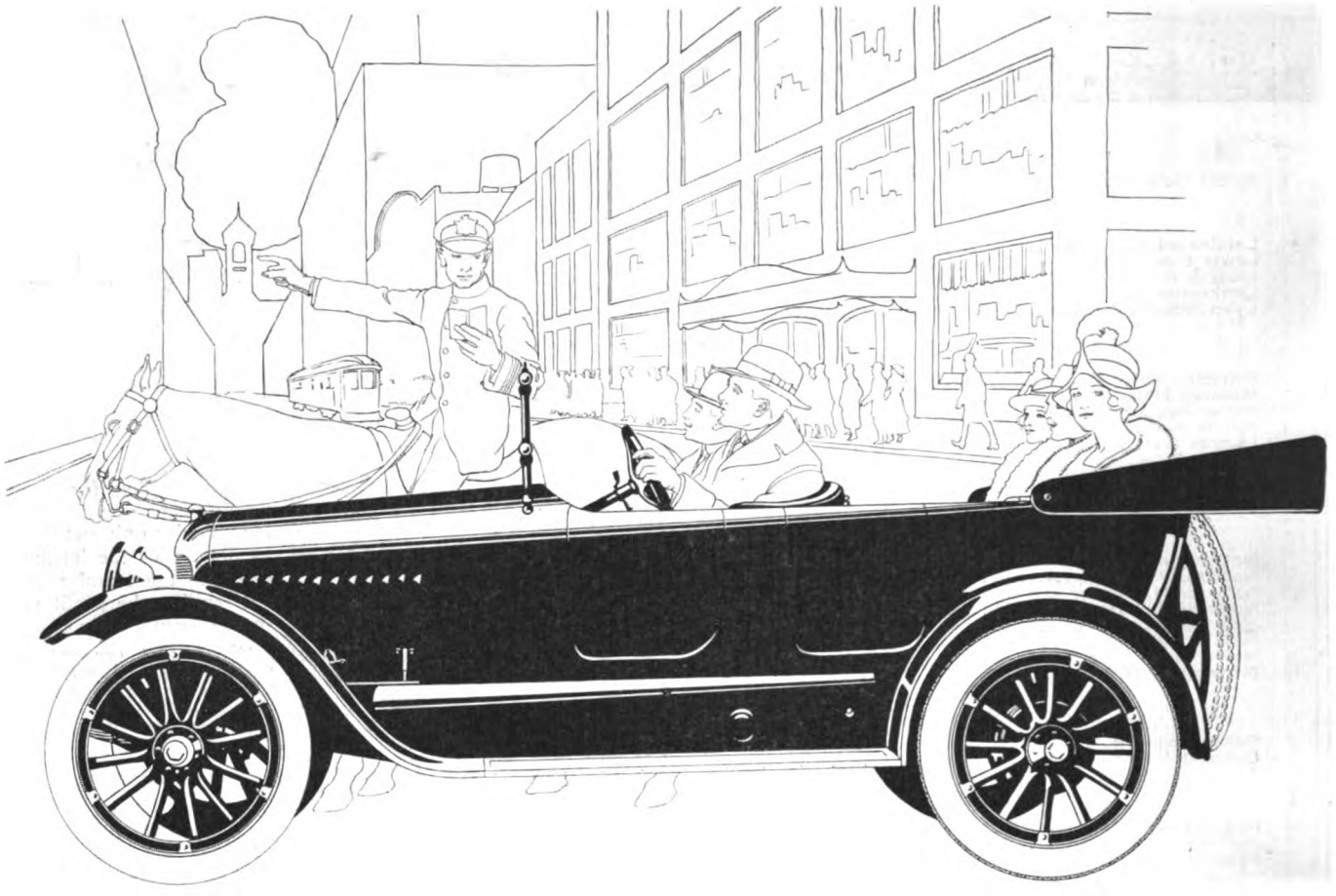
SELDEN TRUCKS

DEALERS! Our proposition is different from the propositions you have had offered to you heretofore. It's a new one—a liberal one from your side of it—a real money-making proposition for YOU in every sense of the word.

It will pay you to investigate our Co-operative Sales Plan.

Selden Truck Sales Co.
Rochester, N. Y., U. S. A.

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GRANT SIX

Five Passenger Touring Car.	$825
Three Passenger Roadster..	825
Five Passenger Sedan, Convertible Top	1,000
Three Passenger Roadster, Convertible Top	960

All prices f.o.b. Cleveland.

A GREAT CAR
Produced in the World's Most Modern Factory

The appeal of the Grant Six lies wholly in the magnetic attractiveness of great value. Our entire selling argument may be reduced to one word—*compare.*

Compare size, power, beauty, quality, mechanical construction—and price—and you **must** concede Grant leadership.

Our new factory, at Cleveland—the most modern in the industry—is a marvel of completeness. Equipped with a model system of progressive assembly, it has an annual production capacity of 35,000 cars. Grant success has been achieved by putting **value** first.

See the latest Grant Six at the New York Show and you will understand why we were forced to erect this giant plant.

Grant Motor Car Corporation
CLEVELAND, OHIO

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Nearly a Million FORDS on the Road

Help KEEP them on the Road by Using

MOSSBERG WRENCHES

And Special Tools for FORDS



No. 17 Set—Heavy duty for Ford. 10 sockets, including those special sockets for spark plug, rear axle housing and cylinder head nuts. Price each, $2.00



No. 30 "Ideal" Set for Fords. 10 sockets, including all special sizes. Ratchet handle, universal joint and extension bar. Price each, $4.00



No. 15 "Major" Set—Covers all adjustments on Fords, including reversible ratchet handle. Price each, $5.00



No. 33 Set—A small, forceful set for packing under the seat. Five special sockets and double-end offset handle. Price each, $1.10

This Means

TRADE MARK

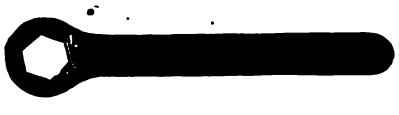
Actual Insurance

If your dealer cannot supply you we will ship prepaid on receipt of price.



Specially designed for Fords. Engineers' wrenches. 5 wrenches, 10 openings.

Your copy of complete Mossberg Tool Book No. 191-I if you will send address.



No. 645, Reverse and Brake Pedal Tension Spring Wrench. The only practical wrench for this work. Each, 50c.



No. 660 Wheel Puller. Indestructible and efficient. Each, 80c.



Combining all the special wrenches that help the smooth running of your car. Price, $1.40

FRANK MOSSBERG CO.

ATTLEBORO, MASS., U. S. A.

BRANCHES

Hastings & Anderson Co., Chicago, Ill.
F. W. Lynn, Dallas, Texas.
D. L. Herman, Seattle, Wash.
W. W. Crandall Co., Nashville, Tenn.
Ewing-Lewis Co., San Francisco, Cal.
Ewing-Lewis Co., Los Angeles, Cal.

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DENBY

TRUCKS

FOR TRAIL OR PAVEMENT

THERE is as much sales-value in the smallest bolt on a Denby truck as in the sturdy frame, the economical power-plant or the efficient internal-gear drive that make possible its marvelous road-qualities.

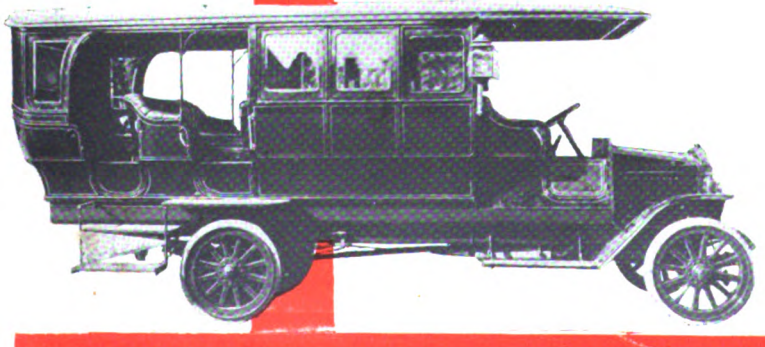
For permanent sales-value is dependent on service. And the phenomenal service records of the Denby are due to the fact that even the smallest and most-hidden parts are as sturdy for their purpose as skill and science can make them.

Buyers appreciate Denby dependability—any Denby dealer will tell you so. And we'll be glad to discuss with you the Denby possibilities in your territory.

Write us about them.

Denby Motor Truck Company

Dept. F — Detroit, Michigan



Four Models—
1 to 2½ tons in rating

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MOTOR WORLD

for

DEALERS, JOBBERS AND GARAGEMEN

Volume L
No. 3

New York, January 17, 1917

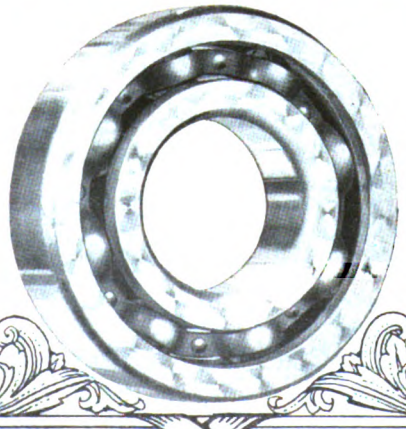
Twenty-five cents a copy
Two dollars a year

U.S
BALL BEARINGS

Chicago Show Visitors

are cordially invited to visit the new modern-equipped U. S. Ball Bearing factory which has a daily capacity of 10,000 quality bearings.

See Pages 101, 102, 103, and 104

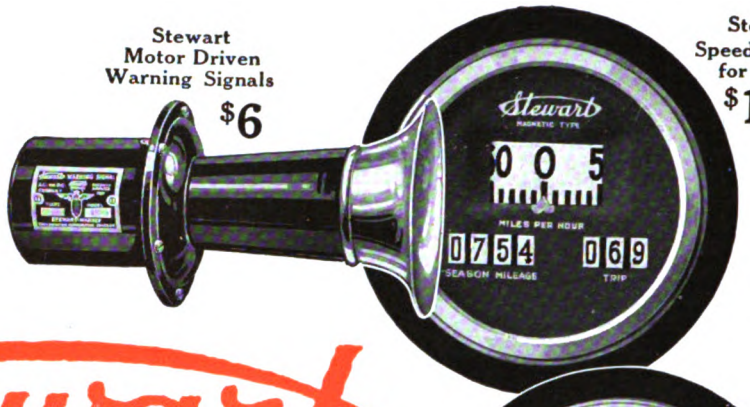


U.S. BALL BEARING MFG. CO.

Palmer St. and Kolmar Ave.
CHICAGO, ILL.

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Stewart Motor Driven Warning Signals $6

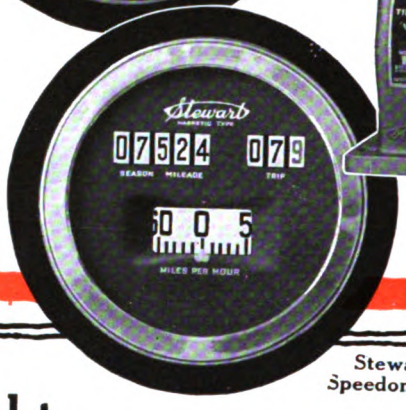


Stewart Speedometer for Fords $10



Stewart Tire Pump $12

Stewart Products



Stewart Speedometer $25

Start the New Year Right

Make 1917 your banner year! You can do it if you get started right.

Determine now to sell nothing but advertised goods—accessories of known value with a reputation and record for service. Eliminate from your line the accessories which demand so much sales effort. They cannot be profitable.

Successful retailing of automobile accessories depends entirely upon the brands you carry in stock. Accessories which have a quick turnover, and for which there is a big demand, are real money-makers. You really can't afford to handle any other.

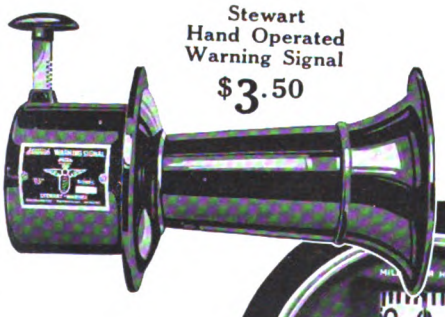
Look about you and note the successful merchants in other lines. In nearly every case you will find their success is due to featuring only advertised goods.

Stewart Products are leaders—a line that is standard, well-known and widely advertised. Stewart Products have a name and reputation second to none. That is why Stewart Products are the fastest-selling accessories today. This is the line you should feature and concentrate on for 1917.

Let Stewart Products help make 1917 your biggest, most profitable year. Start right now—determine to sell nothing but advertised goods—begin with a complete line of Stewart Products.

"It will pay you to see that every car is Stewart-equipped."

Stewart Hand Operated Warning Signal $3.50



Stewart Vacuum System $10



Stewart PRODUCTS
PRESTIGE QUALITY SERVICE SATISFACTION
MADE IN USA

Warner Auto-Meter $50





Stewart Spark Plug $1

The Stewart-Warner Speedometer Corporation
Chicago, Illinois, U.S.A.

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Studebaker

Established 1852





THAT both the products and policies of Studebaker are particularly liberal in the benefits to the dealer is evidenced by the extreme satisfaction voiced by over 6,700 men who represent it in all parts of the country. These photographs show but a few of the many enthusiastic dealers' meetings conducted by Studebaker throughout the year.

Studebaker dealer connections are based on something more than a general agreement as to territory and yearly quota of sales. The requirements involved are rigid and exacting, but once the relationship is established, every proved method of co-operation is employed by the Studebaker Sales Department that will tend to build prestige for the dealer and increase his profits.

The reasons why these dealers regard their association with Studebaker as such a strong asset may be of interest to you.

STUDEBAKER

South Bend, Ind. Detroit, Mich. Walkerville, Ont.

Address all correspondence to Detroit

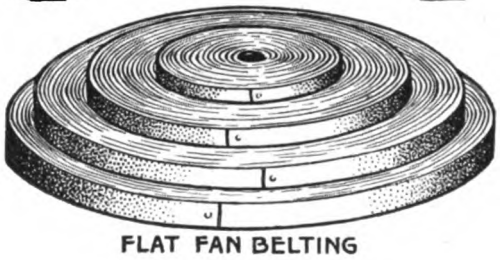


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Write for samples of these good fan belts

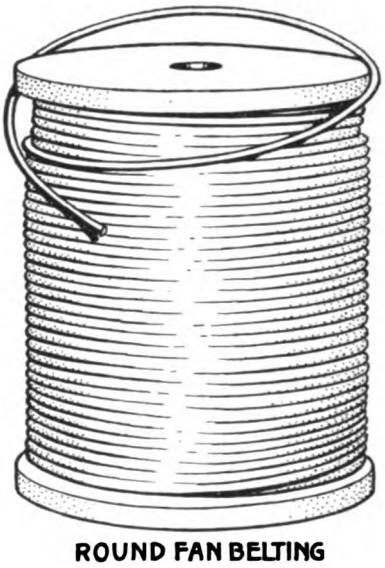












Here's a line of automobile fan belts that meets the highest requirements of durability and service.

Solid "V" Belt—Made with or without lugs. Accurately cut to angle and size. Flexible, strong and practically stretchless. Dependable deliveries guaranteed.

Flexo "V" Belt—Designed for running on grooved pulleys. Laminated, each lamination overlapping the other. Very pliable and practically stretchless.

Wetpruf **Flat Fan Belt**—Used by many leading car builders and guaranteed to withstand water, heat and oil.

Wetpruf **Stitched Fan Belt**—Very flexible. Two-ply, triple stitched.

Round Fan Belting—For fans and other light drives. In spools of 100, 200 and 500 feet. All sizes from ⅛ to ½ inch.

Flat Fan Belting—In rolls. Absolutely water proof, heat proof and oil proof. Can be cut to any desired length and made endless with a flexible fastener, which we furnish. Unless otherwise ordered, laps will be stitched with two rows of strong linen thread.

Write for samples and prices of any or all these dependable belts

DEALERS!
75 per cent of the leather parts used in the manufacture of automobiles today is furnished by this company. Leather parts that for years have met the rigid tests of car makers and their engineers are sure to satisfy your customers. Write for our profit-making proposition.

DEALERS!

HIDE, LEATHER & BELTING CO.

227 D South Meridian Street
INDIANAPOLIS : : : : : INDIANA

Detroit Office: 406 Kerr Building
W. C. DuCOMB, Jr., Special Representative

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MOTOR WORLD
DEALERS, JOBBERS AND GARAGEMEN

PUBLISHED EVERY WEDNESDAY

The Class Journal Co.
231-241 West 39th Street, New York City
Horace M. Swetland, President
W. I. Ralph, Vice-President E. M. Corey, Treasurer
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Detroit—95 Fort Street, West, Phone Main 1351
Cleveland—516-517 Swetland Bldg., Phone Prospect 167

Subscription, Per Annum (Postage Paid).....$2.00
Foreign and Canadian Subscriptions.....4.00
Single Copies (Postage Paid).....10 Cents

Postage Stamps will be accepted in payment for subscriptions. Checks, Drafts and Money Orders should be made payable to MOTOR WORLD.
The payment of subscriptions will be shown by stamping the date of expiration—the month and year—on the wrapper that carries your paper each week. No other acknowledgment necessary.

Cable Address, "MOTORWORLD," New York
Entered as second-class matter at the New York Post Office, Nov., 1900
Member of the Audit Bureau of Circulations

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The Class Journal Co.

Editorial Contents

Chicago—The Dealers' Mecca.....5-6
The Ticket Situation..... 7
Men You Will Meet.....8-10
This is a list of factory officials who will be at the Chicago show.
Dealer Dinners in Pictures.....11-16
Here are pictures of many of the luncheons and banquets that were held during the New York Show.
Accessories .....17-32 and 49-57
Illustrations and descriptions of many of the items which the dealer and garageman can put on a car while it is laid up.
Putting Your City in Publicity.....33
Reilly tells how to get that factory publicity across.
Show Managers Meet.....34-35
Local managers of shows met during the show and discussed their problems; there will be another meeting in Chicago.
Accounting and System.....36
Angles of the Law.....37
Winter Business.....38-39
Here are some ideas for taking the discouraging droop out of the sales curve.
Scientific Garage Construction.....40
Questions Answered.....41
Repairshop Short-Cuts.....42-43
Editorial Observation.....44
Opinions from Readers.....45
The Movies in Advertising.....65
Tire Prices Rise.....67
Milwaukee Show a Hummer.....70-71
Motor World Guide.....74-75
Regular News Department.....65-73

Advertisers' Index on Pages 262-263

"NORMA"

"NORMA"
BALL BEARINGS
(Patented)

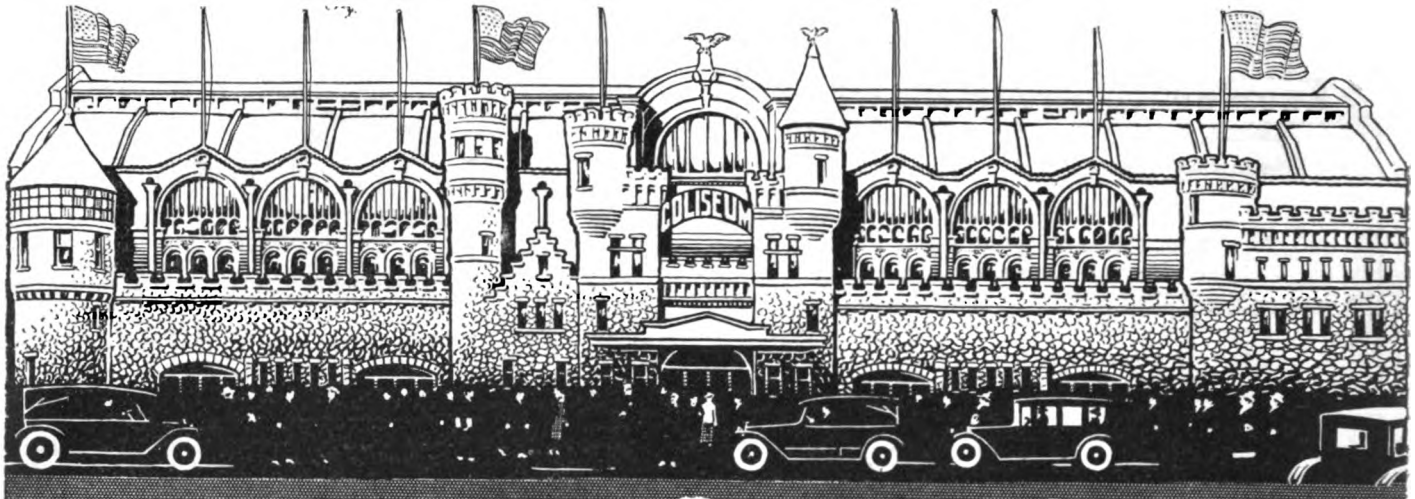
The service that a car or truck is capable of rendering is limited by the endurance of its weakest part. Makers of high-grade magnetos and lighting generators are not willing that car or truck failure shall be charged against the accessories they build. Therefore, among the safeguards they provide for themselves and their customers are "NORMA" Bearings—used almost without exception as standard equipment by makers of accessories of the better class.

Be Sure Your Electrical Accessories are "NORMA" Equipped

THE NORMA COMPANY OF AMERICA
1790 BROADWAY NEW YORK
Ball, Roller, Thrust, Combination Bearings

"NORMA"

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AT THE AUTO SHOW—Follow the Throng

Our exhibit at the New York Show was so fascinatingly interesting and **practical** that nearly every visitor stopped to view it. The exhibit is so worth while that we urge you to see it at the Chicago Show.

HARTFORD EQUIPMENT

offers much to its users in the way of comfort, safety, convenience.

*Hartford
SHOCK ABSORBER

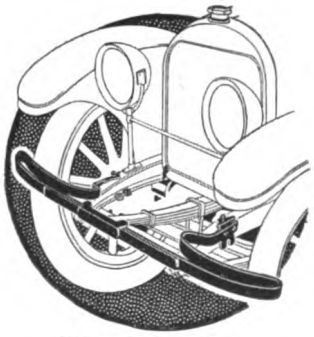


Here's Comfort

The action of an automobile spring with and without the Hartford Shock Absorber is illustrated in a most comprehensive manner and the necessity of the Hartford strikingly demonstrated. Those who see the demonstration go away with the conviction that there's a world of truth in the claim—

"Makes Every Road a Boulevard"

Hartford
BUMP ABSORBER
—more than a Bumper



Here's Safety

A small car, equipped with a small Hartford Bump Absorber, rides, full tilt, into a post without any ill effects to the foreparts of the car or to the car itself, the Hartford demonstrates its ability to absolutely protect a car under all conditions; proving its right to the title—

"The National Guard for Motor Cars"

Hartford
AUTO JACK



Here's Convenience

A half a ton of metal—the weight of a heavy car on any of its four wheels—rests upon a stock Hartford Auto Jack. You can lift this weight with a mere twist of your wrist, proving to your complete satisfaction that here is the easiest-working jack and more—

"The Best Jack Money Can Buy"

EDWARD V. HARTFORD, Inc.
Heretofore Known as Hartford Suspension Co.
142 Morgan St., Jersey City, N. J.
Makers of the Hartford Shock Absorber, Hartford Cushion Spring, E. V. Hartford Electric Brake, Hartford Auto Jack, Hartford Bump Absorber, Red Rack Jack.
Branches: New York, 1846 Broadway, with Service Station at 1926 Broadway; Boston, 319-325 Columbus Ave.; Chicago, 2637 Michigan Ave.
Distributors in principal cities. Dealers everywhere.

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Vol. L New York, U. S. A., Wednesday, January 17, 1917 No. 3

On to

CHICAGO

The Dealers' Mecca

The Attraction

The Spirit of the West, its hospitality, its handclasp. A dozen new cars and scores of accessories

The Attracted

Dealers, distributers, garagemen, accessory men and supply men from the great Middle West

CHICAGO'S annual show is the great dealer show of the year. To the Windy City exhibit dealers and distributers from the entire Middle West flock in droves. At the 1916 show more than 3,000 motor car and accessory merchants, garagemen and repairmen passed the ticket takers, and this year there will be that many at least, and perhaps more.

Chicago always has been the great gathering place for the old guard of the industry; it is the show where the handclasp reigns supreme. And there are many reasons why this should be so.

It is permeated by the great spirit of the West, the home of hospitality; it is virtually the center of the great automobile belt of the country; it holds much in the way of both cars and accessories that seldom if ever are put on display at the opening of the New York show.

At the 1916 show, for example, there were eleven cars revealed that had not previously been exhibited. Similarly there were half a hundred new accessory items displayed for the first time.

This year the Chicago show will not reveal anything less in the way of new products.

There will be a dozen or more new cars, among them the Glide, Hackett, Milburn electric, Woods dual power Classic, Pan American, Stephens, Paterson, Halladay, Dispatch, and some others.

Among the accessory exhibitors who display their wares for the first time are such firms as the Benjamin Electric Co., Chicago; the W. H. Howell Co., Geneva; the Tobey Polish Co., the Triple Action Spring Co., the Tuthill Spring Co., Van Cleef Bros., Badger Brass Mfg. Co.,

THIS ISSUE AT A GLANCE

	Page
The Ticket Situation	7
Men You Will Meet	8-10
Dealer Dinners in Picture	11-16
Accessories	17-32 & 49-57
Regular Departments	33-48

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Continental Motors Co., Edison Storage Battery Co., Garford Co., Oakes Co., Imperial Brass Co., Vesta Accumulator Co., Warner Gear Co., Wakesha Motor Co., Wilson & Co., and several dozen others.

One of the most interesting cars at the show will be the Fageol, which has one of the highest priced chassis in the world, if not the very highest. The chassis sells for $11,000. The car will be exhibited as a four-passenger touring speedster, and is equipped with a Hall-Scott six-cylinder aviation motor, rated 125-150 h.p. A special custom body is now being fitted to the chassis at the shops of the C. P. Kimball Co. The motor is equipped with Bosch electric lighting, starting and ignition apparatus, and with the gearset takes up about three-fourths of the length of the chassis. Connection between the gearset and the Kardo axle is by a short shaft and universal. Light weight is a distinctive feature of the car, which is different in appearance from any other on the market, and is characterized by a wedge-shaped radiator and an unusually low body.

The Chicago show will live up to its reputation as a great business show, and these new exhibits will hold much of interest to dealers and distributers who have traveled, some of them, thousands of miles.

National Characters Gather

But the principal drawing card of the show will be the good fellowship. At the 1916 show such nationally known figures as Prince Wells of Louisville, L. G. Martin of Pittsburgh, John S. Johnson, Winton branch manager in Minneapolis; J. F. Moriarity of Kansas City, Harry Fosdick of Boston, and his brother of the Rose-Fosdick Co., Dallas; C. P. Rockwell of Boston, A. L. Reeke of Milwaukee, Robert Weinstock of San Francisco, J. W. Bowman of Boston, Louis Geyler of Philadelphia, Charles W. Price, Thomas J. Hay, J. V. Lawrence, B. C. Sykes, A. M. Robbins, C. H. Foster, H. M. Allison—all these men and many more whose names stand for big business in the motor car trade foregathered. Few of them will miss the show this year, and in addition there will be a host of others.

Business this year does not seem to require the close attention it required a year ago. This should leave the really big men more time to get around and visit among their friends.

But they do more than visit. To them the show is a business opportunity as well as a social event. Here they gather hundreds of ideas which they take back with them to their home cities and apply to their own businesses. One dealer has solved his used car problem, and a dozen others hear of it and adopt his methods; another has put in practice a new method of paying salesmen which is working out beautifully; a third has adopted something radically new and equally as excellent in the management of his service station; and so it goes.

Many Dealer Meetings

Dealer meetings, dinners and luncheons are legion at the Chicago show. Last year, Velie, Franklin, Hudson, Reo, Saxon, Studebaker, Chandler, Chalmers, Dodge, Hupmobile, Paige and a few others gathered their dealers together to hear of new factory processes and the latest in salesmanship and service.

This year Franklin has scheduled a luncheon for every day of the show, some of the others being Maxwell, Saxon, Mitchell, Paige, Hupmobile, the Klaxon Co. and the Tobey Polish Co. The dates and further information will be found in the appended table.

One of the most important gatherings of the week will be the meeting of local show managers which is to be held Tuesday at noon. During the New York show, a number of show managers got together over the luncheon table and mapped out the plan for the Chicago gathering. At New York, an excellent start was made, and a dozen or more questions of vital interest to every show manager in the country were discussed. At Chicago some of the questions will come up for further discussion, and a lot more will be brought up. It is by this general discussion of the troubles of the show manager that the troubles will be made to disappear.

Events of the Week

Jan. 27—Franklin Automobile Co.—Luncheon.
Jan. 27—Maxwell Motor Co.—Meeting at Blackstone.
Jan. 28—Maxwell Motor Co.—Meeting at Blackstone.
Jan. 29—Franklin Automobile Co.—Luncheon.
Jan. 29—Maxwell Motor Co.—Meeting at Blackstone.
Jan. 30—Maxwell Motor Co.—Meeting at Blackstone.
Jan. 30—Franklin Automobile Co.—Luncheon.
Jan. 30-31—Velie Motor Vehicle Co.—Morning at Claridge.
Jan. 31—Saxon Motor Car Corp.—Luncheon, 1 o'clock, Blackstone.
Jan. 31—Maxwell Motor Co.—Meeting at Blackstone.
Jan. 31—Franklin Automobile Co.—Luncheon.
Jan. 31—Mitchell Motors Corp.—Congress.
Feb. 1—Paige-Detroit Motor Car Co.—Banquet, La Salle.
Feb. 1—Franklin Automobile Co.—Luncheon.
Feb. 1—Hupp Motor Car Corp.—Luncheon, Congress.
Feb. 1—Maxwell Motor Co.—Meeting at Blackstone.
Feb. 2—Maxwell Motor Co.—Meeting at Blackstone.
Feb. 2—Franklin Automobile Co.—Luncheon.
Feb. 3—Franklin Automobile Co.—Luncheon.
Feb. 3—Maxwell Motor Co.—Meeting at Blackstone.
Jan. 31——Klaxon Company—Sales Conference.
Jan. 31—Tobey Polish Co.—Dinner, Congress, 6.30 P. M.

MORE Men You Will Meet

(*See also pages* 8-9-10)

Briscoe Motor Corp.—Congress—*J. R. Findlater, general supervisor; *L. E. Wilson, vice-president; *Robert T. Walsh, advertising manager; *J. L. Stanley, assistant sales manager; *J. Haltenberger, engineer; *Benj. Briscoe, president; district, managers, E. W. Doty, Charles Salak, F. A. Bixby, H. W. Martz, Charles Eichinger, manager of Motor Car Sales Co.; W. G. Eichinger, salesman; P. B. Smithson, A. P. Mracek, G. C. Buston, Frank Bishop, Jack Graf.

Maxwell Motor Co.—Blackstone—*C. E. Stebbins, assistant director of sales; F. L. Buckbee, Chicago zone.

Maxfer Co.—Headquarters, 1512 S. Wabash Ave.—*H. O. King, engineer; *H. H. Henry, general manager; *W. A. Baxter, general sales manager; *John Turriff, assistant sales manager.

Rubber Insulated Metals Corp.— Sherman—*William F. Hart, General Sales Mgr.

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Both Sides *of the* Show Ticket Situation

An Explanation; a Plea for More Cooperation

BOYS, it's up to you, squarely. No ticket arrangement ever devised was puncture-proof—and none of them is really non-skid. But if you are up against it, so is the management of the show. We're giving you both sides of the question. The big need is more cooperation.

CONSIDERABLE dissatisfaction was expressed during and after the New York show regarding the dealer ticket arrangement.

Dealers generally were sent three single admissions by mail. If a dealer went in in the morning, out for lunch, in again, out for dinner and in again his three admissions were gone, and unless he got some more tickets from somewhere he had to pay 50 cents each time he went in. Many paid this 50 cents several times.

On the other hand, some of these dealers went to the manufacturers whom they represented and were able to secure additional tickets. Some of these the manufacturers had to pay for and some they didn't. A certain leeway for emergencies was provided by the management.

But those dealers who didn't get any more tickets after their three admissions were exhausted were sore at heart—and complained.

Inasmuch as the same arrangement will be in effect at the Chicago show a word to dealers may not be amiss. This seems to be the situation:

1 — The management is anxious to have dealers attend the show, and each dealer ought to be able to get in and out every time he wants to.

2 — The management is constantly perplexed to find a plan which will prevent the pass arrangement being abused, for it is charged—and rightly — that dealers abuse their free ticket privileges. Wherefore, show managements everywhere are constantly trying new plans in order to eliminate the abuse of the privilege.

Now, dealers, no matter what you think of it, give this plan a fair shake at the Chicago show. If you have three admissions, and if three times is all you want to go in, the three tickets should be enough.

If you legitimately run out of tickets ask the manufacturer you represent if it is possible for him to give you an admission to get you back in after you have gone out.

Don't expect a pocketful of tickets. You are not entitled to them and shouldn't be sore if you don't get them. Try to be reasonable and cooperate with the management.

Put yourself in the place of the management. If you were running a show would you feel justified in doling out tickets to everyone who asked for them? —and each man who asks thinks he is entitled to what he asks for. The result would be that there would be no such thing as a paid admission and the shows would die. The paid admission is what helps keep them alive.

Don't give your tickets away unless you aren't going to use them, and if you give them to prospects don't be surprised if you find yourself short and compelled to pay for more. All of this may sound harsh to you, but just try to be reasonable and put yourself in the manager's place.

As to the management's side of this, Motor World believes there has yet to be invented a perfect gate system for an automobile show. Anything which extends privileges to a dealer or anyone else can be abused.

The nearest plan to perfect we have seen is the Kansas City duplicate signature plan whereby a man signs a pass and then signs a slip and shows the pass signature and the slip signature together.

Aside from that, the nearest perfect would seem to be a photograph identification plan, but this has not been operated thus far at any principal show.

At all shows there is some dissatisfaction with the ticket arrangements; the big need is for more cooperation.

350,000 Persons Passed The Gates

NEW YORK, Jan. 15—If present estimates of the New York show management are correct about 350,000 people passed in through the gates of the big exhibit, which closed Saturday night. Last year the estimate—for no accurate count of all kinds of admission is kept—was 300,000, and the management estimates an increase of 15 per cent for this year.

It is probable that nearly 3000 dealers attended. Between 2500 and 2600 attended last year's show and it is stated that there were more this year. The actual number present will not be known for several weeks.

While it is practically impossible to get an accurate line on business done at the show the exhibitors all state that business exceeds that done at any previous show. Interest in cars was keen on the part of the public and both wholesale and retail business was transacted.

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Men You Will Meet
AT THE SHOW

These Men You Will Meet at the Show are in three lists—Cars, Accessories and Jobbers. Those before which is an asterisk (*) are delegated by their companies to give especial attention to dealers and to handle dealers' business. The name of the hotel at which the company will make its headquarters, aside from the exhibit at the show, follows the company's name.

By Stanley P. McMinn

CARS

Allen Motor Co.—Congress—*V. E. Wright, *L. W. Place, R. G. Ewell, L. A. Sommer.

American Motors Corp.—Sherman—*Marcus I. Brock, R. B. Johnston, Charles W. Govan, district sales manager; John C. Spiers, general manager; Louis Chevrolet, vice-president and chief engineer; Chauncey F. Holt, director.

Apperson Bros. Auto.—Stratford—*T. E. Jarrard, vice-president and general sales manager; R. M. Kelvie, assistant sales manager.

Auburn Automobile Co.—Great Northern—*J. J. Farley, sales manager.

Baker R & L Co.—Annex—*Charles L. F. Wieber, Sr.; *C. L. F. Wieber, Jr.; A. C. Faeh.

Bartholomew Co.—Lexington—*A. G. Bartholomew, sales manager; G. G. Luthy, treasurer.

Ben-Hur Motor Co.—Headquarters, 1219 Michigan Boulevard.

Cadillac Motor Car Co.—Congress—*E. C. Howard, sales manager; *L. McNaughton, assistant sales manager.

Chalmers Motor Co.—E. C. Morse, vice-president and general manager; W. J. Drumpelmann, assistant sales manager.

Columbia Motors Co.—Congress—*W. L. Daly, sales manager; *J. G. Bayerline, president; *W. E. Metzger, vice-president; *A. T. O'Connor, secretary and treasurer; Ray Long, engineer; A. D. Plughoff, J. W. Leavitt (San Francisco).

Cunningham, Son & Co., James.—Headquarters, 2341 Michigan Boulevard, Cunningham Building—*George W. Costello, *C. A. Baird.

Detroiter Motor Car Co.—La Salle—*W. H. Van Deusen, director of sales and advertising; A. O. Dunk, W. R. Bamford, R. T. Yeats.

Dort Motor Car Co.—Congress—*J. D. Mansfield, *W. A. Chapman, J. D. Dort, president; R. B. Dort, advertising manager.

Elgin Motor Car Corp.—Sherman—*G. V. Beck, *C. F. Jamison, F. L. Brown, president; C. F. Rieman, general manager.

Elkhart Carriage & Motor Car Co.—Congress—*G. B. Pratt, secretary; *W. F. Moomaw, vice-president; *W. H. Patterson, manager.

Empire Automobile Co.—Congress—*F. A. Babcock, sales manager; J. Horwitz, T. O. Jones, Mr. Beam, L. V. Cram.

Enger Motor Car Co.—Auditorium—*E. E. Lincoln, sales manager; E. L. Jones, general manager.

Grant Motor Car Corp.—Congress—*George S. Waite, F. F. Wood, assistant sales manager.

Haynes Automobile Co.—Planter's—*H. R. Perry, sales manager; *D. L. Watson, assistant general manager; A. G. Seiberling, general manager; F. N. Nutt, chief engineer; R. T. Gray, advertising manager.

Hudson Motor Car Co.—Congress—O. H. MacCornack, sales manager; E. V. Rippingille, assistant sales manager; C. C. Winningham.

Harroun Motors Corp.—*John J. Plath, *R. Ward Macey, John Guy Monihan, president; Ray Harroun, vice-president.

Inter-State Motor Co.—La Salle—*B. W. Twyman, *E. B. Proudfoot, *C. T. Zeigler, *O. N. Lawson, *B. D. Arthur, *Grover C. Davis, Henry Knippenberg.

Jordan Motor Car Co.—Congress—*W. B. Riley, E. S. Jordan, Paul Zens, Russell S. Begg.

Lexington-Howard Co.—La Salle—*F. B. Ansted, *Emery Huston, J. C. Moore, L. A. Hansen, F. I. Barrows, etc.

Lewis Spring & Axle Co.—Auditorium—*F. T. Newton, sales manager; F. H. Lewis, president; H. R. Cooley, assistant sales manager.

Kissel Motor Car Co.—Congress—*Charles E. Giltner, director of sales; *John F. Lynch, George A. Kissel, president; W. L. Kissel, secretary and treasurer; H. S. Daniels, director of publicity.

Lozier Motor Co.—La Salle—*S. J. Frank, assistant secretary; *G. B. Berger, assistant treasurer; Samuel Frank, secretary.

McFarlan Motor Co.—New Southern—*H. M. Hopkins, supervisor of sales; E. W. Cotton, A. H. McFarlan.

Mercer Automobile Co.—George H. Smith.

Milburn Wagon Co. — Congress — *R. S. Woodhull, sales manager; Otto Marx, vice-president.

Mitchell Motors Co., Inc.—Congress—*John Tamish, general sales manager; *F. W. Pelton, assistant sales manager; G. W. Hipple, general merchandising counsel.

Moon Motor Car Co.—Headquarters, 2700 Michigan Avenue, Shadburne Bros. Co.—*J. V. Thomas, *F. H. Rengers, *D. S. Dider.

Mutual Motors Co.—Congress—*J. I. Handley, president; *D. B. Williams, sales and advertising manager.

Nordyke & Marmon Co.—Congress—*H. H. Rice, sales manager, F. E. Moskovics, commercial manager; C. E. Gambill, manager, Chicago Branch.

Pan-American Motors Corp.—Headquarters, 220 South State St.—*A. H. Wygast, sales manager.

Parru Mfg. Co.—Lexington—*E. J. Harman, assistant sales manager; R. P. Henderson, general sales manager; Earle P. Martin, district sales manager.

Pathfinder Co.—La Salle—*W. E. Stalnaker, vice-president and director of sales.

Peerless Motor Car Co.—Congress and Annex—*H. C. Bates, *Ben Rennerd, *W. P. Kennard, R. J. Schmunk, general sales manager; W. W. Lewis, assistant general sales manager.

Paige-Detroit Motor Car Co.—La Salle—*H. M. Jewett, president; *F. L. Jewett, assistant; H. Krohn, sales manager; *A. L. Tisch, advertising manager; W. A. Wheeler, production manager; Mr. Germonprez, Andrew Bachle, G. C. Mather.

Premier Motor Corp.—Congress—*P. D. Stubbs, director of sales; *R. D. Heartz, assistant director of sales; *H. L. Pelton, district manager; *A. G. Dale, district manager; *Preston A. Berry, district manager; *E. W. Hurd, J. C. Flowers, president; A. J. Banta, vice-president; P. W. Tracy, purchasing agent; Homer McKee, director of advertising; E. W. Steinhart, vice-president.

Pullman Motor Car Co.—Kaiserhof—*A. R. Cosgrove, general sales manager; *C. W. Schmoock, factory representative.

Regal Motor Car Co.—Congress—*F. L. Pierce, sales manager; *J. H. Hurtzell, district manager; *L. G. Hamilton, advertising; F. W. Haines, president and general manager.

Saxon Motor Car Corp.—Congress—R. C. Getsinger, sales manager; R. N. Harger, advertising manager; C. V. H. Cairns, district sales manager; F. B. Packwood, district sales manager; C. L. Fox, sales department.

Standard Steel Car Co.—La Salle—*F. C. Van Derhoof, *H. A. Houser, *H. B. Hills, Jr., O. E. Barthel, Roy Lasher.

Stephens Motor Branch—Lexington—*M. A. Steele, *B. F. Durham, *A. J. Proy.

Studebaker Corp. of America—Blackstone—*R. T. Hodgkins, sales manager; A. R. Erskine, president; L. J. Ollier, vice-president; R. T. Hodgkins, general sales manager; G. L. Willman, advertising manager; H. T. Myers, commercial car sales manager; S. A. McGonigal, office manager; T. E. McMeans, territorial manager; N. R. Garland, charge of information bureau; J. G. Heaslet, vice-president; Mox Wollering, production manager; R. E. Baus, assistant production manager; C. L. Bocuks, assistant production manager; F. M. Zeder, chief engineer; Max Hagelstine, assistant chief engineer; A. H. Pearsall, branch manager; C. S. Connor, assistant branch manager; wholesale salesmen: J. K. Leander, F. W. Rosche, W. H. Perry, W. M. Smith, H. C. Celnaw, R. L. Aisquith, C. R. Hennig, O. Rosenquist; retail salesmen: Messrs. Markle, Hunter, Belda, O'Connor, Wells, Levy, Georgen, Gerhart, Mitchell,

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Taylor, Johnston, Fisher, Keeling, Deutsch, Deicken, Graves, Joy, Thorp, Kelly.

Stutz Motor Car Co.—*W. N. Thompson, sales manager; H. C. Stutz, president; H. F. Campbell, secretary, H. W. Freeberg, purchasing agent; E. T. Klee, service manager.

Sun Motor Car Co.—La Salle—*R. Crawford, president and general manager; *H. G. Weaver, assistant general manager; *W. H. Barger, sales promotion manager; S. A. Merinbaum, purchasing agent; H. A. Minturn, engineer; J. L. Larkin, assistant secretary-treasurer.

Velie Motor Vehicle Co.—*F. E. Bradfield, sales manager; L. H. Hazard, chief engineer; C. B. Rose, vice-president; H. T. Wheelock, advertising manager.

Woods Motor Vehicle Co.—Headquarters, Twenty-fifth and Cottage Grove Avenues.

ACCESSORIES

A. B. C. Starter Co.—Annex—*W. J. Bradt, sales manager; Wm. M. Irvine, service department; Charles P. Sieder, president and general manager; Alexander Churchward, vice-president and engineer; T. F. Drews, assistant general manager.

Adamson Mfg. Co.—La Salle—J. C. Milsom, C. F. Adamson.

American Bronze Co.—La Salle—John W. Watson, president; Matthew C. Dittmann, secretary and treasurer; Richard A. Watson, production manager; Victor W. Dow, assistant to the president; William E. Jordan, salesman.

American Bureau of Engineering, Inc.—Headquarters 1018 South Wabash Avenue—*C. J. Buckwalter, H. H. Buckwalter, C. J. Buckwalter, F. G. Moloney.

Armstrong Cork Co.—Stratford—*C. H. Young, *G. T. Turner, *E. F. Ebberts.

Asbestos and Rubber Mfg. Co.—Headquarters, 1323 South Michigan Avenue—L. J. Miley, J. A. Whitney, M. C. Sickels.

Atwater Kent Mfg. Works.—Blackstone—*H. E. Rice, *H. R. Carlisle, R. N. Dippy.

Auto Parts Mfg. Co.—Congress—W. Schwab, C. W. Beckler, F. G. Bremer, Harry French.

Automobile Supply Mfg. Co.—Planter's—*F. C. Van Gieson, sales manager; D. O. Mead.

Auto-To Compressor Co.—Sherman—*M. Hixson, *Mr. Clucker, *Mr. Stough, J. W. Lawhead.

Badger Brass Mfg. Co.—Congress—*R. H. Welles, *L. J. Keck, *W. A. Bell.

Bay State Pump Co.—Auditorium—*R. T. Green, general manager; J. W. Murphy, superintendent; A. J. Bolger, salesman.

Becker Bros.—Headquarters, 23 North Jefferson Street—*H. E. Schmalz, *H. M. Campbell, *O. E. Becker, *J. M. Smith.

Benford Mfg. Co.—New Southern—*E. M. Benford, *David Levin, *William Meyer, C. L. Cagney, A. Grief, L. Foltz.

Brown-Lipe-Chapin Co.—Congress—H. W. Chapin, general manager; *Samuel H. Cook, sales manager; Donald D. Ormsby, chief engineer.

Brown-Lipe Gear Co.—Congress—*Ward F. Herst, assistant general manager; H. W. Chapin, general manager.

Brown Spring Oiler Co.—Blackstone—W. H. Brown.

Brunner Mfg. Co.—La Salle—*George L. Brunner, *D. G. Caywood, *H. B. Jenkins, *H. S. Atherton.

Brunswick-Balke-Collender Co.—Headquarters, 623 South Wabash Avenue—*J. E. Duffield, sales manager.

Buda Co.—*J. M. Viles, vice-president; *Lon R. Smith, sales manager; W. J. Walsh, assistant sales manager.

Budd Mfg. Co., E. G.—Headquarters, 4026 Lake Park Avenue—*Hugh L. Adams, vice-president.

Byrne, Kingston & Co.—Brevoort—J. W. Johnson, secretary and treasurer; C. T. Byrne, vice-president; M. B. Falvey, C. O. Wiley, Moore Kelly, E. H. Geyer, Paul Burke, W. H. Breedlove.

Carr Co., F. S.—Congress—V. C. Cramer, J. S. Beatty.

C & E Mfg. Co.—La Salle—H. M. Cooper, A. R. Cooper, S. A. Fulton.

Carter Carbureter Co.—University Club—H. H. Weed, H. S. Staton, L. D. Young.

Caskey-Dupre Mfg. Co.—La Salle—S. F. Dupress, Jr.

Clark Equipment Co.—La Salle—R. J. Burrows, E. C. Mogford, J. P. Ware, E. B. Ross.

Champion Ignition Co.—Annex—*A. Champion, *W. S. Isherwood, Messrs. Cook, Kennedy, Fox and Joyce.

Columbus Varnish Co.—Sherman and Congress—S. W. Hanna, C. M. Simpson, C. O. Connell, T. W. Williams.

Continental Motors Co.—Blackstone, Annex and La Salle—*G. W. Yeoman, B. F. Tabin.

Corcoran-Victor Co.—Congress—*W. W. Earley, F. H. Carruthers.

Corning Glass Works—Edward A. Cassidy, J. K. Gilchrist, I. B. Cary, P. S. Kimball, H. O. Sharp, H. S. Lyman, R. G. Ames, E. C. Wright.

Cowles & Co., C.—Great Northern—*M. S. Bottume, *C. A. Tournier.

Craftsmen Motor Corp.—Headquarters, 2815 South Wabash Avenue, Craftsmen Building—*E. H. Holmes, Gridley Adams.

Cramp & Sons Ship & Engine Building Co., William—Congress and Annex—*Courtland D. Cramp, Ira B. Ashenfelter.

Crew-Levick Co.—Auditorium—*Harry Hellinger, S. H. Goodman, H. M. Woodward, H. M. Hemberg.

Curtis Pneumatic Machinery Co.—La Salle—*L. C. Blake, *C. E. Doud.

Detroit Battery Co.—Blackstone—Mr. White, Mr. Freundlich, Mr. Elston.

Detroit Weatherproof Body Co.—Blackstone—*Lawrence Moore, Messrs. Wells, Hampson, Wright, Douglas.

Disco Electric Starter Corp.—S. W. Elston, president and general manager; W. C. Johnson, assistant to the president; J. T. Boone, chief engineer; T. G. Murton, sales manager.

Dixon Crucible Co., Joseph.—New Southern—*A. H. Thomson, G. V. Batty, A. K. Sutton, Mr. Brandon.

Double Fabric Tire Co.—Congress—R. B. Crane, C. L. Stebbins, A. L. Murray.

Durkee-Atwood Co.—Congress—W. F. Potter, A. F. Durkee.

E. A. Laboratories, Inc.—*H. H. Eckhouse, *F. Eisele, J. Aufiero, vice-president.

Edelmann & Co., E.—Congress—E. Edelmann.

Eclipse Machine Co.—Congress—*G. A. Christopher, *A. C. Rice, E. J. Dunn, J. C. Ferguson, V. Bendix, G. G. Brandenburg, J. I. Brandenburg.

Edmunds & Jones.—Blackstone—G. E. Edmunds, L. M. Pyle, F. E. Castle.

Edison Storage Battery Co.—Headquarters, 2025 South Michigan Avenue—*W. F. Bauer, H. G. Thompson, vice-president and general sales manager.

Electric Storage Battery Co.—Great Northern—H. B. Marshall, George D. Luther, P. G. Downton, R. I. Baird, J. T. Peyton, W. L. Howell, T. Pardee, Charles Blizard, third vice-president; Wm. H. Palmer, Jr.

Endurance Tire & Rubber Co.—Congress—J. H. Cooper, A. W. Shattuck, H. E. Smith.

Ericcson Mfg. Co.—Sherman—*W. C. Berling.

Eureka Rim Compressor, Inc.—Blackstone—*E. J. Flannery, *M. Casson, Jr.

Federal Miniature Lamp Division—Headquarters, 501 South Jefferson Avenue—A. W. Freund, W. Sotzen, O. F. Stuefer, G. C. Reeves, J. K. Weiser, J. S. Marker.

Ferro Machine & Foundry Co.—La Salle—*F. R. Schubert, Crispin Ogleby, president; H. N. Leonard, general manager; A. M. Dean, engineer.

Federal Rubber Co.—Commerce—H. A. Githens, G. H. Hamilton.

Findeisen & Kropf Mfg. Co.—Congress—*C. W. Findeisen, sales manager; *H. E. Merrithew, district manager; *A. E. Barlow, district manager; E. A. Bates, advertising manager.

Firestone Tire & Rubber Co.—Congress—C. H. Gerhold, H. E. Hass.

Fitzgerald Mfg. Co.—Great Northern—J. P. Hutchinson.

Fulton Co.—La Salle—S. A. Fulton, G. F. Morrisey.

Garford Mfg. Co.—La Salle—*Homer Stephens, sales manager; *W. H. Scott, *A. B. Smith.

Gemco Mfg. Co.—Congress—*John Craig, *Martin A. Dewey, Jr., G. F. Discher, president; L. A. Raasch, sales manager.

General Asbestos & Rubber Co.—Congress—C. B. Jenkins.

Gibson, Hollister Mfg. Co.—Congress—*George S. Hollister, T. F. Russell.

General Tire & Rubber Co.—New Southern—C. B. Adair, A. L. Martin, W. O'Neill.

Globe Machine & Stamping Co.—Sherman—*R. B. Dangeleisen, W. F. Edwards, I. F. Goodrich.

Gould Storage Battery Co.—Headquarters, 225 East Twenty-second St.—*R. W. Chamberlain, W. S. Gould, vice-president; B. A. Clark sales manager.

Grossman Mfg. Corp., Emil.—New Southern—*Rudolph Cony, *Emil Grossman, *H. G. Wedler, *A. R. Rosenberg.

Gray & Davis, Inc.—Blackstone—*Wm. Gray, *R. W. Harris, *W. W. Burke, *K. Greenleaf, D. H. Elkins, V. W. Collamore, E. F. Wackwitz.

H & D Co., Inc.—Stratford—*D. M. Peck, president; *C. A. Doland, vice-president; *H. F. Little, treasurer; *D. D. Hains, general manager.

Halladay Co., L. P.—Illinois Athletic Club—*L. P. Halladay, *W. J. Heiniche, *D. Marshall.

Hartford, Inc., Edward V.—Congress and Annex—*E. R. Waterman, A. Waterman.

Hassler, Inc., Robert H.—Blackstone—*E. D. Fauts, Robert H. Hassler, D. G. Ong.

Haynes Mfg. Co.—Blackstone—*H. Jaw Hayes, *E. D. Emmons.

Heinze Co., John O.—Congress—*Wm. Pflum, *H. C. Anderton, R. B. Miller.

Hill Insulating & Mfg. Corp.—Chicago Athletic Club—*Robert R. Hill, B. Darrach, Jr., Charles G. Vogell.

Hoover Spring Co.—Auditorium—*E. Downing.

Howe Mfg. Co.—Headquarters, 1732 South Michigan Avenue.—*B. G. Cochrane.

Humboldt Machine & Stamping Co.—*F. Furrelle, R. W. Russell.

Imperial Brass Mfg. Co.—Headquarters, Harrison Street and Racine Avenue—J. Pettis, J. Schroeter, W. D. Noyes, A. H. Franklin, J. T. Greenlee, E. Kaufman, Charles E. Young, F. McNellis.

Inland Machine Works.—Headquarters, 1402 South Michigan Avenue—*Mr. Frank, *Mr. Miller, *Mr. Flannary.

Indiana Lamp Co.—Headquarters, 1323 Michigan Ave.—L. P. Zinke.

Interstate Electric Co.—Sherman—*Percival Stern, F. K. Levy.

International Coat Co.—*A. H. Strauss, D. Knopfer.

J. H. Tonneau Shield Co.—Auditorium—*Mr. Nisbet.

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Judd & Leland Mfg. Co.—New Southern—M. L. Harlen.

Kellogg Mfg. Co.—Blackstone—Mr. Weller, Mr. Monson, Mr. Kirk, Mr. Edwards, M. R. Anstice.

Kemco Electric Mfg. Co.—Congress—Frank W. Glass, W. G. Fowler.

Klaxon Co.—Congress—*R. L. Wilkinson, *W. H. Bendfelt, *Charles Johnson, *Frank B. Ruoff, *J. M. Donohue, *P. Peifer, D. A. McConnell, president; Walter P. Coghlan, secretary and treasurer.

Kokomo Electric Co.—Brevoort and Sherman—*J. P. Grace, *Paul Burke, *M. L. Grace, *C. O. Wiley, *M. B. Falvey, *E. K. Geyer, J. O. Johnson, treasurer; C. T. Byrne, president.

K-W Ignition Co.—Bismark—*C. Albracht, R. J. Eiseman, R. H. Bechtol.

Keyless Auto Clock Co.—Congress—O. A. Perry, E. G. Phinney.

Lane Brothers.—New Southern—*George Lane, vice-president, *Silas Lane, *Charles H. Laird, Jr.

Leather Tire Goods Co.—Sherman—*C. B. Woodworth, *A. P. Marshall, D. M. Nourse.

Leece-Neville Co.—Sherman—*Arthur A. Skinner, George S. Cole, B. M. Leece, H. C. Branch.

Lipman Air Appliance Co.—La Salle—*C. E. L. Lipman, *W. W. Robinson, *Theo. E. K. Lipman, E. Lipman.

Lumen Bearing Co.—La Salle—*L. S. Jones, H. F. Russell, K. Barr, P. J. Hoeffler.

McQuay-Norris Mfg. Co.—Congress—*L. H. Dally, *H. H. Cummings, *R. B. Pratt, *F. Stevenson, W. K. Norris, C. L. Derrickson, L. A. Saffard, A. J. Mummert.

Mann Co., F. W.—Edward A. Cassidy, I. B. Cary, P. S. Kimball, H. O. Sharp, J. K. Gilchrist, H. S. Lyman, R. G. Ames, E. C. Wright.

Marvel Accessories Mfg. Co.—La Salle—*Wm. Trostler, *O. S. Kenzy, *E. J. Thalman, *J. E. Clare.

Master Carbureter Co.—New Southern—*A. B. Walton, *Arthur Jelley, *A. J. Halverson.

Master Spark Co.—Headquarters, 1469 Michigan Avenue.—*D. W. Sweeney, general manager; *H. F. Van Ness, M. D. Sweeney, secretary-treasurer.

Mayo Skinner Mfg. Co.—Congress—F. Mayo, H. G. Weakley.

Metal Specialties Mfg. Co.—Congress—L. W. Golder, N. H. Oliver, D. Steinberg.

Metal Stamping Co.—Fort Dearborn—*J. F. Galvin, *G. A. Lyon, *W. R. Noyes, *O. J. Bauer.

Midland Supply Co.—New Southern—W. J. Sandford, M. Hensing, J. R. Lane.

Mosler & Co., A. R.—Sherman—*J. W. Fischer, *E. Gluckauf, *C. D. Parr, *E. H. Struthers, W. G. Liebling.

Mossberg Co., Frank.—Congress—E. W. Scott, R. J. Jones, A. H. Harrop.

Moto-Meter Co. — Blackstone — *Harrison Boyce, Charles S. Monson.

New Era Spring & Specialty Co.—Brevoort—*Smalley Daniels, *W. E. Canis.

Niehoff & Co., Paul G.—Congress—P. Niehoff.

Northwestern Chemical Co.—La Salle—F. R. Hall, M. P. McGee, B. H. Barker.

Oakes Co.—Congress—*F. E. Glass, Louis Schwitzer, W. H. Oakes.

Otis Elevator Co.—La Salle—*C. C. Hancock.

Perkins-Campbell Co.—Headquarters, 1329 South Michigan Avenue—*M. D. Campbell.

Picard & Co., A. J.—Congress—*A. J. Picard, R. A. Picard, George W. Reid, C. A. Parker, C. White.

Piel Co., G.—Edward A. Cassidy, I. B. Cary, P. S. Kimball, H. O. Sharp, J. K. Gilchrist, H. S. Lyman, R. G. Ames, E. C. Wright.

Pouvallsmith Corp—La Salle—*John Van Benschoten, *G. E. Smith.

Raybestos Co.—La Salle—*R. Everett, S. Simpson, president.

Reliable Auto Heater Co.—Congress—*J. B. Langley, *George L. Wells.

Remy Electric Co.—Annex—*J. D. Hopper, service manager; H. W. Griffith, O. F. Conklin, J. G. Wood, G. V. M. Ellehan.

Sager Co., J. H.—New Southern—*J. H. Sager, *C. J. Iven.

Schleit Mfg. Co., Inc., W. A.—Sherman—*W. A. Schleit, *J. H. Bacon, Jr., A. Barry, George Mason.

Schrader's Son, Inc., A.—Blackstone—*M. C. Schweinert, *M. H. Tisne.

Shaler Co., C. A.—La Salle—*M. E. Faber, *R. E. Malone, *R. B. Dunlap, *E. B. Carroll.

Shakespeare Co.—Sherman—*sales manager.

Silvex Co.—Congress—J. W. Staff, W. N. Davidson, C. C. Heffley.

Simms Magneto Co.—Sherman—*E. H. Hohenthal.

Sparks-Withington Co.—Annex—*C. Falkinburg, F. Rogers, H. Gumper, Wm. Sparks.

Splitdorf Electrical Co.—C. W. Curtiss, W. J. Murray, R. S. Preble, M. W. Bartlett, D. R. Walls.

Springfield Body Co.—Blackstone—*E. W. McGookin. Congress—J. R. Ide.

Standard Parts Co.—Congress—*W. Stutson, *A. F. Stengle, *A. G Brandt, J. C. Manternach, P. W. Gilbert, B. A. Quayle, F. R. Wilhelmy, B. G. L. Dodge.

Stevens & Co.—Congress—*Louis Schwab, *E. C. Huntington, J. J. McGuckin, J. M. Morse, Paul Rinck.

Stromberg Motor Devices Co.—Headquarters, 64 East Twenty-fifth Street—*W. L. O'Neill, *C. R. Collins.

Sunderland Mfg. Co.—New Southern—W. J Sunderland, W. M. Andressen.

Sunderman Corp. — Congress — *E. E. Schwartzkopf, R. Sunderman, F. R. Sunderman.

Syracuse Malleable Iron Works—La Salle—*Burns Lyman Smith, *J. C. Neville, *Bachlan Macleay.

Tobey Polish Co.—Headquarters, 58 East Washington St.—*G. R. Schaeffer, *C. H. Willis, H. M. Murray.

Tuthill Spring Co.—Headquarters, 760 Polk Street—*D. S. Campbell, H. H. Osborne, H. T. Moore.

United Engine & Mfg. Co.—*Robert E. Manley.

Universal Shock Eliminator, Inc.—Auditorium—*Mr. Newton, *Mr. Shaw.

Universal Motor Products Co.—Congress—Frank E. Smith, O. E. Bullock, E. G. Mann.

U. S. Gage Co.—Congress—*Matthew M. Lawler, George R. Beamer, R. E. Bruckner, Joseph Halla.

U. S. Light & Heat Corp.—Brevoort—*H. A. Harvey, *E. F. Oates, *W. W. Pennington, *George Mueller, *W. W. Halsey, C. A Mudge, J. Allan Smith, Alexander Russell.

Van Cleef Bros.—*Nash Van Cleef, *Maxime Van Cleef, *Felix Van Cleef, *Paul Van Cleef.

Van Sicklen Co.—Congress and Annex—*C. F. Van Sicklen, *F. B. Wood, *J. H. McIver, N. H. Van Sicklen, N. H. Van Sicklen, Jr.

Weeder Mfg. Co.—Auditorium—*E. B. Smith, D. J. Post.

Vesta Accumulator Co.—Headquarters, 2100 Indiana Avenue.

Voorhees Rubber Mfg. Co.—Congress—*K. B. Spencer, Mr. Harmon, Mr. Stanton, Mr. Pierson.

Wales-Adamson Co. — Headquarters, 1402 South Michigan Avenue—*J. A. Adamson.

Waltham Watch Co.—Congress—*E. L. Vail, Messrs. Dearborn, Wilson, W. L. Wigmore, R. F. Wigmore.

Warner Gear Co.—Congress—*H. J. Garceau, *R. P. Johnson, E. B. Baltzly, J. M. Simpson.

Water Gas Carbureter Co.—La Salle—*J. H. Whittman, G. F. Beach.

Waukesha Motor Co.—La Salle—*Mitchell Machie, *H. L. Horning, D. A. Perkins, J. H. Fisher, A. W. Dietzel.

West Side Foundry Co.—New Southern—H. O. Sharp.

Westinghouse Electric Co.—Congress—G. B. Griffin, G. H. Lewis, S. D. Levings, M. B. Hawxhurst, S. G. Blackburn, M. W. Hanks, D. W. Burke, A. E. Jackman, H. S. Johnson, W. A. Haines, H. F. Busch, W. A. Dick, A. J. Brown, H. M. Wible, J. C. McQuiston, H. W. Beaumont.

Wheeler & Schebler Carbureter Co.—Sherman—*George T. Briggs, J. B. Funk, B. Thornburgh, C. K. Alexander, H. J. Roade.

Willard Storage Battery Co.—Blackstone—*H. S. Bentley, R. C. Norberg, W. W. Wyneken, T. R. Cook, R. J. Nightingale, C. S. Whitney, H. S. Gardner, S. S. Jenkins, E. B. Reesler.

Walker Mfg. Co.—Headquarters, 610 Karpen Building—W. T. Walker, A. W. Shattuck, H. E. Smith.

Walden Mfg. Co.—Auditorium—F. W. Jonas, A. W. Jonas, L. Bellows.

Warner-Lenz Co.—Headquarters, 914 South Michigan Avenue—E. C. Patterson, J. H. Cattell.

Weaver Mfg. Co.—Sherman—C. F. Hodgson, T. Ritchie.

White Star Refining Co.—Congress—J. N. Faurer, F. Ryan.

JOBBERS

Auto Supply Co.—Headquarters—A. J. Jackson.

Beck & Corbitt Iron Store Co.—New Southern—J. W. McVauley, C. Dilvogener.

Beers Bros.—Congress—P. C. Beers, W. S. Van Horn.

Brownell Auto Co.—Blackstone—C. W. Horn.

Brownell Co., H. F.—Congress—H. F. Brownell.

Burwell-Smith Supply Co.—Congress—R. V. Smith.

Canadian Fairbanks-Morse Co.—Congress—A. J. Hopkins.

Chansior & Lyon.—Congress—W. A. Avery, T. A. Walsh.

Cooper Rubber Co., I. J.—Sherman—H. H. Brenner.

Electric Appliance Co.—Kaiserhof—S. I. Stuart.

Equipment Co.—La Salle—E. J. Hess, W. S. Reid.

Farmer Auto Supply Co.—Brevoort—C. V. Ayers, C. Sohl.

Korsmeyer Co.—Brevoort—L. W. Korsmeyer, J. W. Sherry.

McCoy Motor Supply Co.—Congress—H. L. Anger.

Millen & Sons, Ltd.—La Salle—J. E. Millen, J. St. Mars.

Miller Bros. Auto & Supply House—Sherman—R. C. McDowell.

Missouri Auto Specialty Co.—Brevoort—L. E. Allmon.

Nebraska-Buick Auto Co.—Congress—C. Stuart, C. L. Carper.

Ozburn Automobile Supply House.—La Salle—N. F. Ozburn, S. A. Webb.

Powell Supply Co.—Congress—C. T. Powell.

Reinhard Bros.—Auditorium—H. H. Reinhard, A. C. Reinhard.

Sieg Iron Co.—Fort Dearborn—H. Englehart, R. R. Englehart.

Smith & Co., C. J.—La Salle—C. J. Smith.

Sommers & Co., G.—La Salle—L. T. Ware

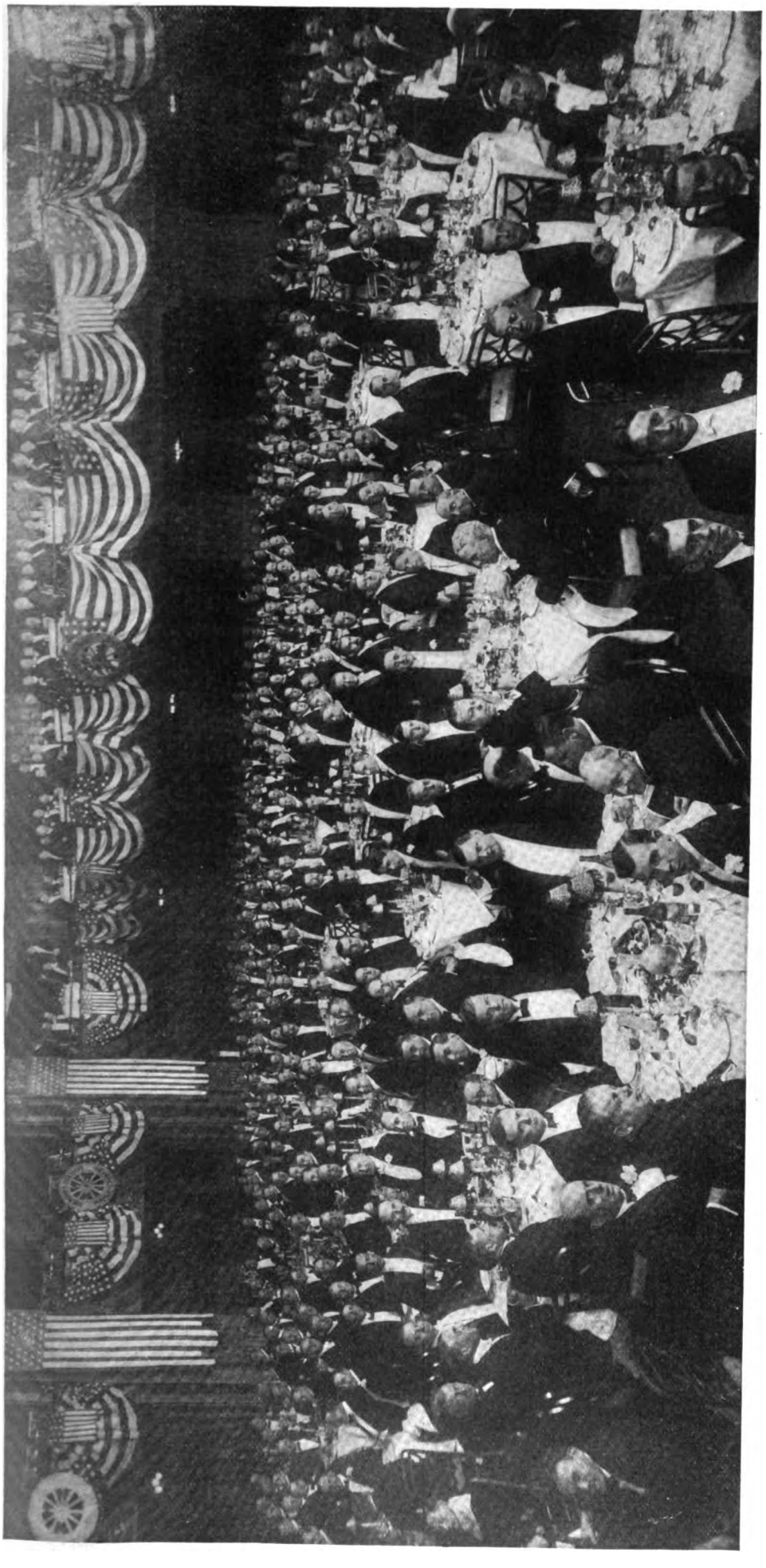
Sweeney Electric Co., B. K.—Congress—F. W. Hodges.

Union Supply Co.—Congress—F. W. Grubb.

Warnock Co., Wm.—Auditorium—Wm. Warnock, E. K. Edgar.

Weinstock-Nicho's Co.—La Salle—R. Weinstock, J. H. Dielman.

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THE MOTOR AND ACCESSORY MANUFACTURERS banqueted Wednesday evening at the Waldorf. Vaudeville was given on a stage just out of view at the left

What the Dealers Did at the New York Show

There Were Dinners and Cabarets and Sales Talks and Movies and a General Good Time

New York, Jan. 15.—If the social side of the New York show, which closed Saturday night, indicates nothing else, it indicates that this has not been a poor year in the motor car industry. There were the usual number of dinners by factories to dealers, but these dinners were on a scale away beyond anything ever attempted before.

Some of the factories have always been good entertainers. Overland, for instance, has generally been somewhat spectacular with its Wild West dinners and cabaret shows, and this year many of the others seem to have gone at it with the Overland goodfellowship idea and the entertainments have been big. Some of the shows have included from a dozen to three dozen entertainers.

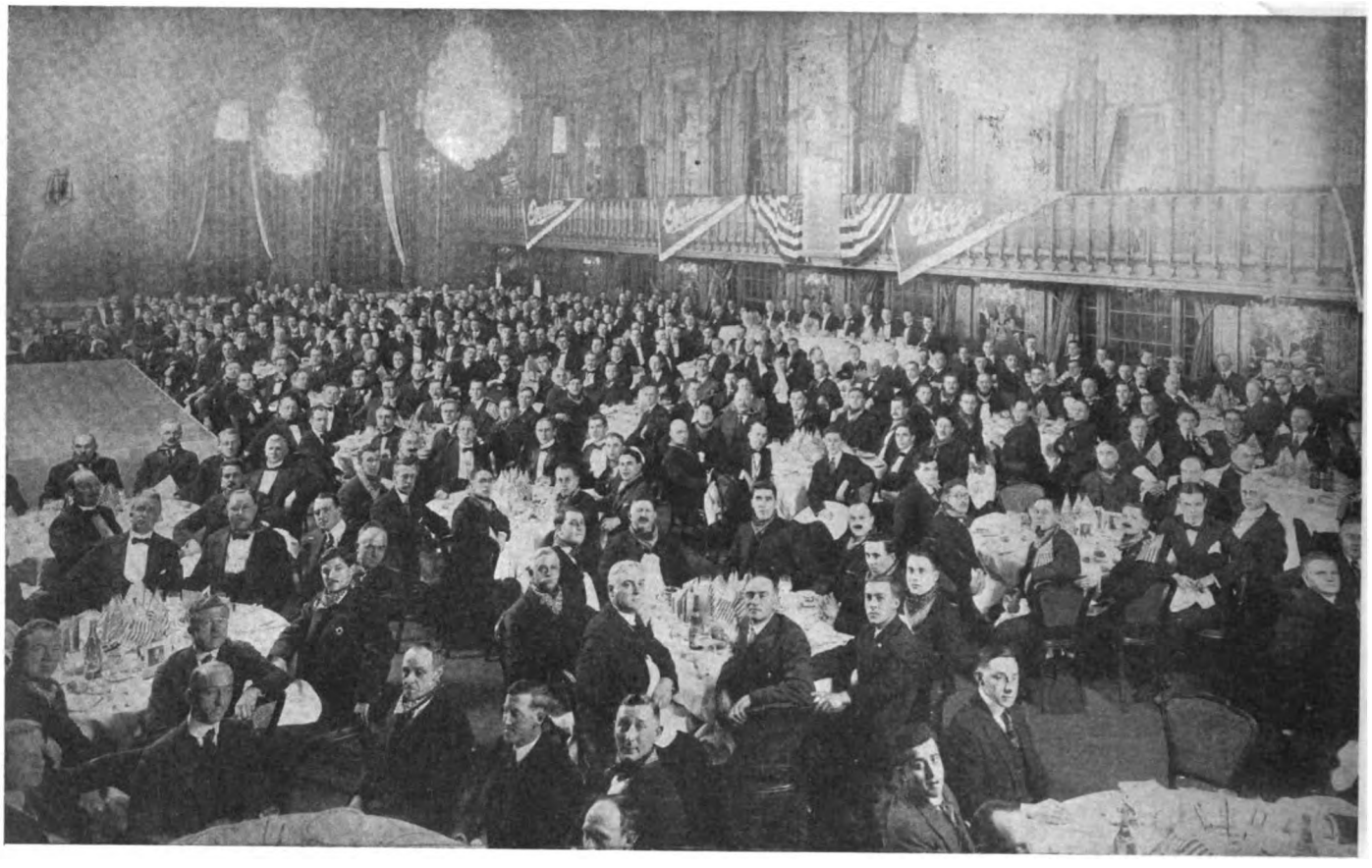
This has cost money; and since money ought to be earned before it is spent—and sometimes is—it is safe to assume that the industry has made money during the past 12 months.

That the dealers, too, have made money seems to be indicated by the large number of new faces at the show and the dinners. Old-timers, who are wont to walk about the exhibits and know most of the people they meet, have been bewildered by the throng of new faces. Many of these are a new crop, and many are the old crop which has made more money the past year than ever before.

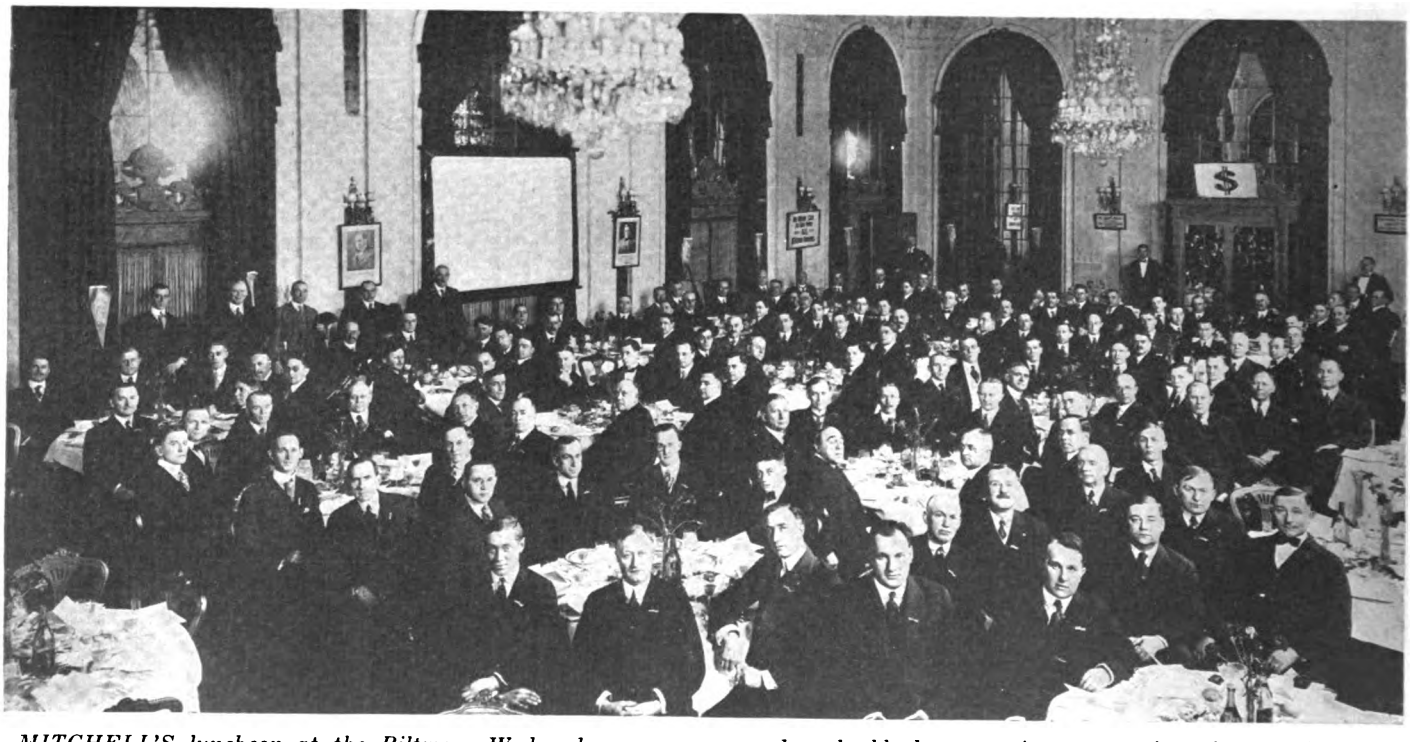
All of this entertaining should not be styled lavish and extravagant. The show is the manufacturer's big opportunity for binding his dealers more closely to himself, and the social side of the show is one of the real attractions to the dealer. Of course, business comes first; but the other side isn't exactly slighted, so the manufacturer has a legitimate field of operation in endeavoring to make the dealer's stay as pleasant as possible. It helps business. Two men who eat together at a cabaret show are generally better friends afterward.

And through all these dinners there

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OVERLAND gave a Wild West dinner at the Biltmore Wednesday evening. The dealers wore gay bandana handkerchiefs and whooped in typical prairie fashion as occasion offered. John N. Willys occupies the center of the speaker's table at the far right

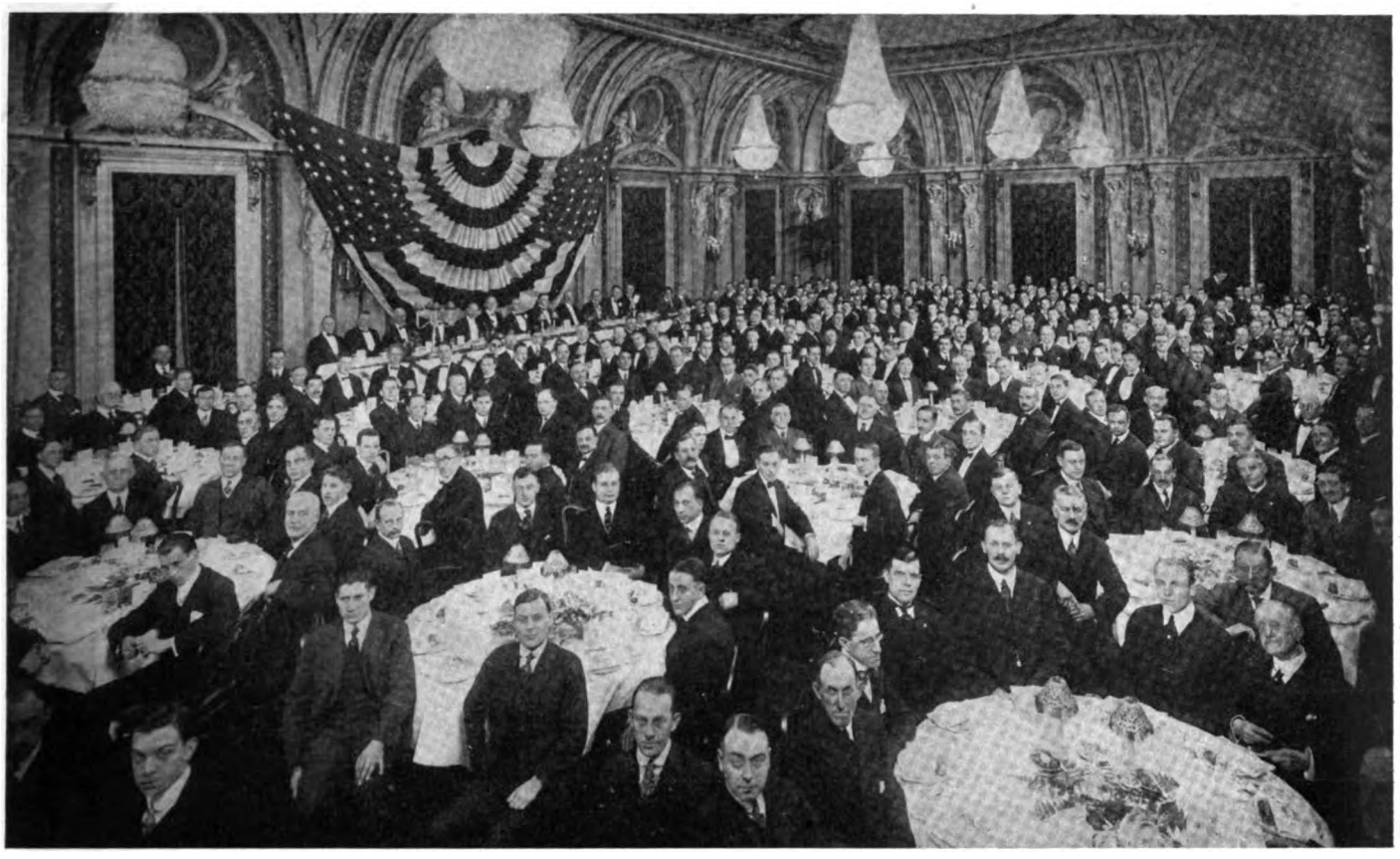


MITCHELL'S luncheon at the Biltmore Wednesday noon was made valuable by a movie presentation of a standardized sales talk on how to sell a Mitchell car. Otis C. Friend, president, and George O. Hipple, sales counsel, sit in front of the screen

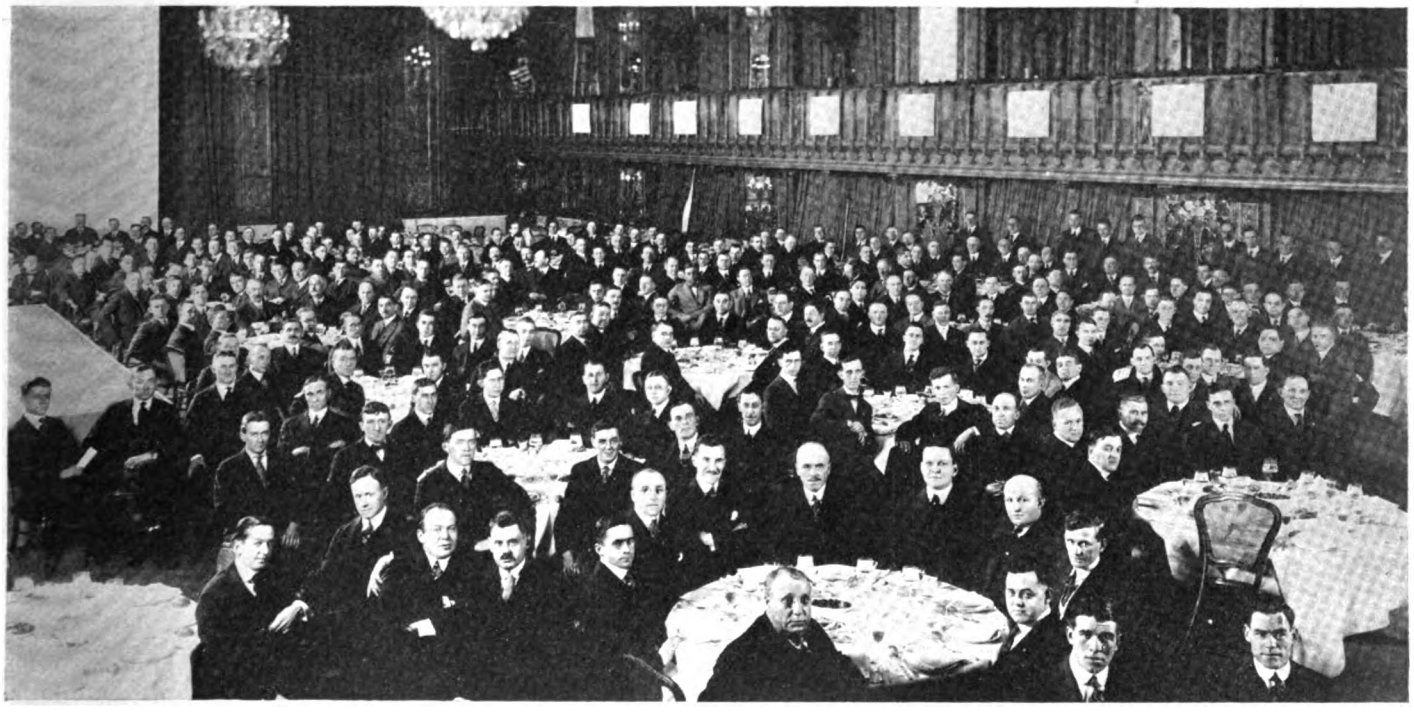
also runs the thread of Better Business and more intensive merchandising. The manufacturers are waking up to what Motor World has advocated for years, that the manufacturer should be the leader in Better Business and intensive merchandising and should tell his dealers HOW to sell instead of doing nothing except urge the dealer to TAKE MORE CARS. Taking cars is easy—selling the cars is something else again.

The most intensive series of dinners scheduled for this winter is that of the Mitchell. Last winter this company presented verbally, through George O. Hip-

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STUDEBAKER'S dinner at the Astor Thursday evening was well attended. Several of the factory officials talked to the dealers and other guests about the business of the past year and the coming season



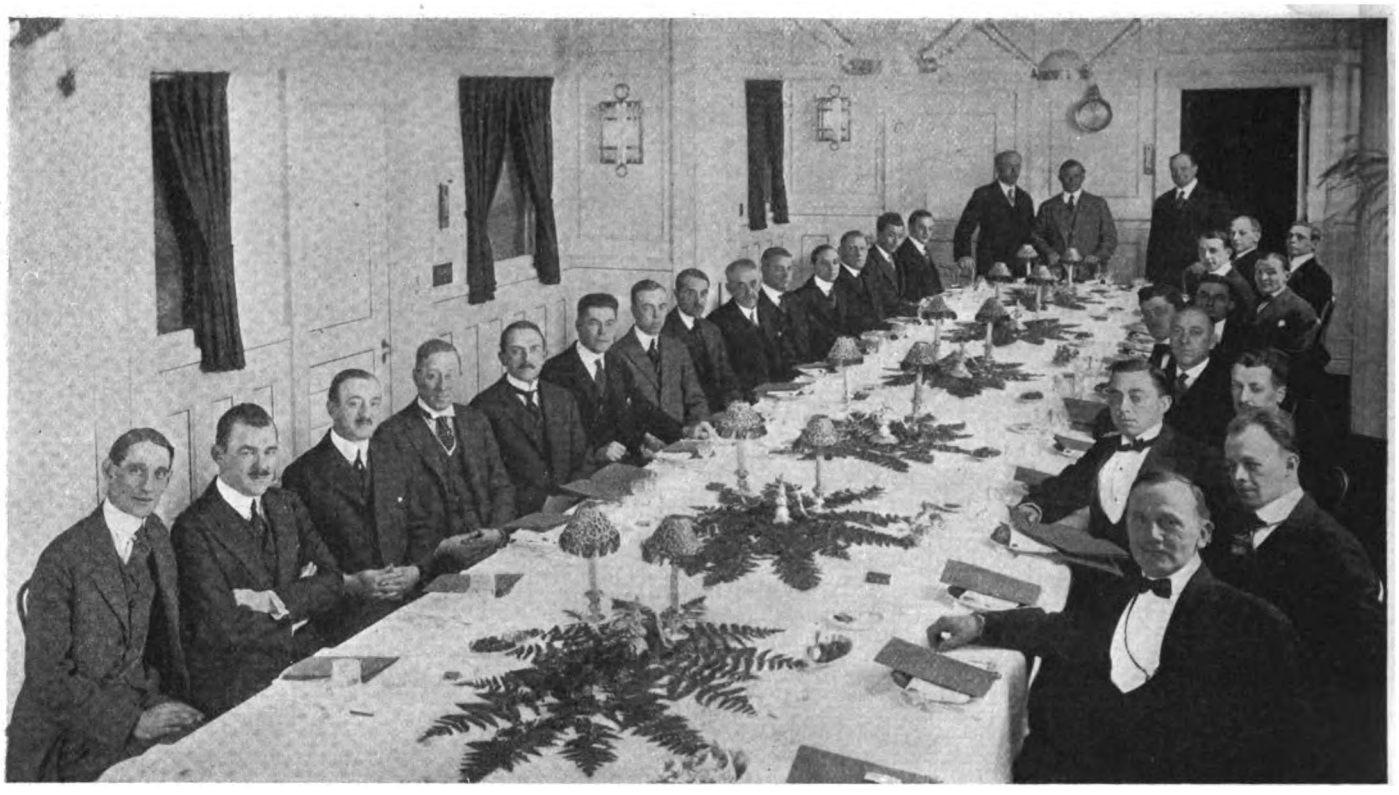
SAXON'S luncheon Wednesday noon at the Biltmore was made the occasion for telling the dealers all about how the car is made, what the factory is like and how to fill in numerous forms used in factory-dealer correspondence.

ple, its merchandising counsel, a standardized sales talk. This year the same thing is shown in moving pictures. The man who sees this show has placed before his eyes the words and movements, in concrete form and in a specific order, as to how to sell a Mitchell car.

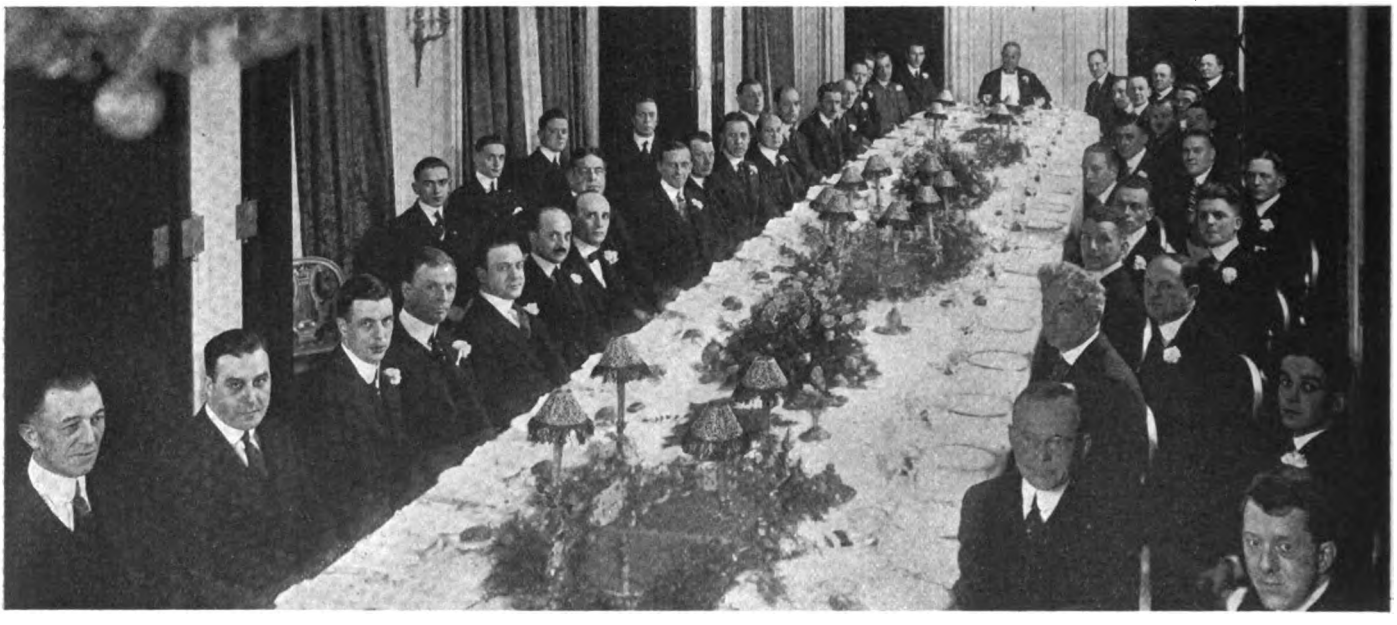
This is of the same nature as "Mr. Anydealer from Anywhere," shown in movies last season by the Hudson. This film was a stinging indictment of Bad Business and a constructive portrayal of what Better Business and intensive merchandising can do for a dealer who will show a little initiative. There should be more of these things.

At the Paige dinner one of the most constructive talks ever given at a show dinner was made by Henry Krohn, the Paige sales manager. Not in flowery, after-dinner language, but in plain A B C English, he told the Paige dealers that the "most beautiful car in America" can't be sold in a blacksmith

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MERCER'S show social function was at the Astor Wednesday. The dinner was part of a sales meeting. Standing at the far end of the table in the center is W. T. White, president of the Mercer Automobile Co., Trenton, N. J.



THE C. T. SILVER MOTOR CO.'S organization was the guest of the Chalmers Motor Co. the evening before the New York show opened, at the Knickerbocker. At the far end in the dress suit is E. C. Morse, Chalmers sales manager. At his right is C. T. Silver

shop, and that the dealer who is going to make money with the Paige line is going to clean up his place of business, develop real selling and business methods, and be a DEALER, not a monkey-wrench man.

Furthermore, it was hammered home by both Krohn and Harry M. Jewett, the president, that the Paige company is making money and that Paige dealers must make money or they can't stay with the Paige company. And then Krohn told them how they must operate to make this money.

And while this dinner was highly constructive, it also was one which featured a big entertainment.

The moving picture was effectively used by the Saxon. It showed the new factory, the men in the company and their past records, the operations and the care and skill concerned with the production of the car, and then were shown various forms used in corresponding with the factory and the exact manner in which these should be filled in, eliminating correspondence. This was valuable information for dealers, many of whom, through improper filling in of the form, had been writing a letter with each form, all of which is unnecessary.

Some of the dinners seemed to lack a definite motive. They were just dinners, and nothing more. These opportunities seem too valuable to be passed over without some good being gotten out of them, even if the factory does nothing more than let the sales manager make himself conspicuous by running a cabaret show and acting as toastmaster for brief remarks by factory officials. All of this helps a little. It brings the deal-

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COLE entertained its dealers at the Manhattan Wednesday. Sales Manager C. P. Henderson is the fourth full face from the left, seated at the table, looking directly at the camera



EXIDE battery men were entertained at the Martinique Thursday. They come from all sections of the country but principally from the East

er closer to the factory and means closer cooperation.

Apart from the dealer dinners, there were the big annual dinners of the Motor and Accessory Manufacturers, the National Automobile Chamber of Commerce and the Society of Automobile Engineers, also the Rubber Club.

The M. A. M. dinner, Wednesday evening at the Waldorf, was just a big, hippy-happy cabaret. Nobody made any speeches. It was discovered some years ago that speeches aren't especially desired, so everybody ate and watched the show and renewed acquaintance with other diners.

The N. A. C. C. dinner, at the Waldorf Tuesday evening, was a regular "stunt" affair. Job E. Hedges made a speech, "Al" Reeves announced that he would open the San Francisco show, and then came "Lost in Litigation," a mock trial of Dodge Brothers vs. Ford, in which the dry bones of the industry were brought out and rattled, to the great amusement of everybody except the owners of the bones.

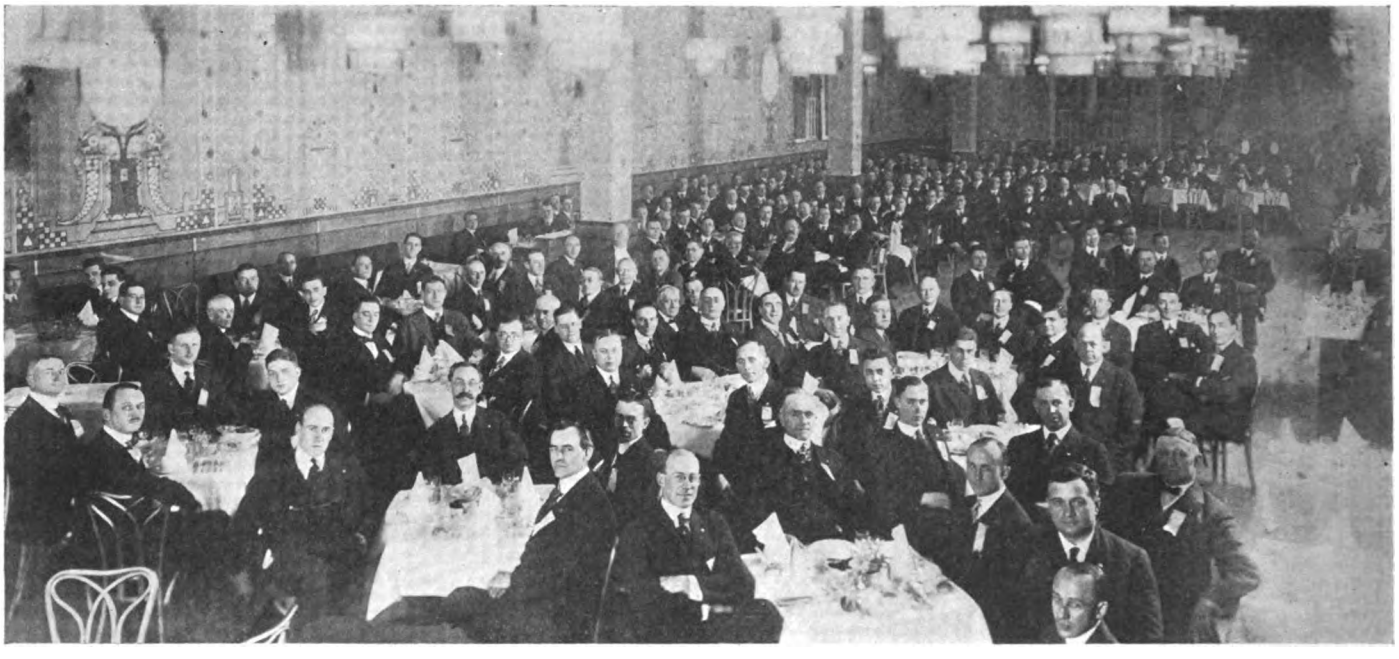
John and Horace nearly busted up the trial several times and Henry nearly died of asthma, and might have but for Mme. Schwimmer. Sam Miles will never be the same after the witness-stand grilling he received, and the industry is still in doubt as to whether a certain car is being made by a Kansas banker or a defunct poet. Jitney fans hope some of Henry's threats come true.

The S. A. E. also went in for a good time. Its dinner Thursday night at the Biltmore was followed by a midnight frolic on the New Amsterdam roof. At the dinner Howard E. Coffin said that

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PAIGE had a merry dinner at Reisenweber's Thursday of show week. Despite the gay trappings the dealers later settled down to serious business subjects



CUTTING-LARSEN, the New York Olds distributer, held sales meetings at its offices before the show with a dinner Jan. 5 at Reisenweber's

manufacturers, as a measure of preparedness, should plan what they would do in case of war. Second Vice-President John Barrett of the Pan-American Society of the United States pointed out the opportunity that awaits the U. S. A. car in Latin America.

And aside from the big association and dealer dinners there were numerous sales conventions. Holt-Welles held one; the Master carbureter did likewise; and the Emil Grossman Mfg. Co. discussed sales topics at the Astor, with a dinner in connection.

As usual, the hotels were filled with factory headquarters. These were suites of rooms of varying extent. In all of them were factory men, advertising men and others who attended to considerable business, and in some of them were exhibits of the company's product. When real dealer business develops it generally is handled at these hotel headquarters rather than at the show.

The dinners and meetings of the week included:

Tuesday, Jan. 10—N. A. C. C., Waldorf; Holt-Welles, at offices; Velie, Claridge; Dodge, Biltmore; Saxon, Biltmore.

Wednesday—Mercer, Astor; Master Carbureter, Park Avenue; Velie, Claridge; Mitchell, Biltmore; M. A. M., Waldorf.

Thursday—S. A. E., Biltmore; Oakland, Manhattan; Holt-Welles, at offices; Hupmobile, Biltmore; Pierce-Arrow, Biltmore; Paige, Reisenweber's.

Saturday—Grossman, Astor.

Additional show dinner pictures appear on Page 69.

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ACCESSORIES

THIS section is for the garageman and repairman who makes an effort to increase his business by equipping the cars in his care with standard accessories. There are hundreds of things the owner would be glad to have fitted to his car while the car is laid up for the winter so it may be ready for him in the spring. Here are some of them:

Piston Rings

Leak-Proof

This compound ring is composed of two concentric L-sections, equal sized, each section fitting into and around the other. The advantage of this construction is that each section exerts an equal expansive force, has equal strength and the slot in the one is covered by the projecting lip of the other. Special alloy pistons, styled Lynite, fitted with Leak-Proof rings, are supplied, ready for installation in the Ford. As the entire piston and ring assembly weighs approximately ⅛ that of the cast-iron pistons, the weight of the reciprocating parts is materially decreased. The price of this set is $30. The rings are made in all sizes for all cars.—McQuay-Norris Mfg. Co., St. Louis.

Burd High Compression

An individually cast and concentric type of ring, having the slot sealed by a patented steel coupling device. The ends of the ring at each side of the slot are dovetailed and fitted with a metallic H-shaped guard that breaks any direct passage through the slot and prevents compression losses. Price, each: 2½ to 3½ in., $1.25; 3½ to 4½ in., $1.50; 4½ to 5½ in., $1.75.—Burd High Compression Ring Co., Rockford, Ill.

Inland

The feature of this one-piece ring is the long spiral lap that extends half around the circumference, so that the gas to pass the lap would have to pass halfway around the ring. Leakage is said to be reduced to a minimum, as the lap is tightly closed throughout its length. Being spirally cut, the ring in expanding tends to expand spirally, thus preserving a perfect circle and applying an equal pressure on the cylinder walls. Price, standard widths from 3/16 to 5/16 in. inclusive: 2½ to 3⅞ in., $1 each; 4 to 4⅞ in., $1.20 each; 5 to 7½ in., $1.50 each.—Inland Machine Works, Eighth and Mound Sts., St. Louis.

No-Leak-O

By the use of a single groove, cut at right angles with the face of the ring, sloping downward at an angle of 45 deg., in combination with a lap-joint construction, this single piece, individual cast, concentric ring tends to prevent any passage of gas or oil past the piston. The effect of the groove is to carry a film of oil that acts as a seal, the sharp upper edge of the groove scraping the excess oil back on the downstroke of the piston. Price, each: 2½ to 3¾ in., 50 cents. Other sizes in proportion.—Automobile Accessories Co., 816 W. North Ave., Baltimore.

Gill

A single-piece individually cast ring, featuring an interlocking, stepped joint, stepped both across and through the ring section, thus giving a double joint. Due to the stepped joint, the rings may open from 3/16 to ¼ in. without loss of compression, it is said, allowing the ring to adjust to oversize, or out-of-the-round cylinders, and requiring no fitting. Price: To 2½ in., $1; 2½ to 3½ in., $1.25; 3½ to 4½ in., $1.50; 4½ to 5½ in., $1.75.—The Chalsmith Co., 3701 S. Ashland Ave., Chicago.

Perfection.

Each complete ring is built up of small concentric ring sections 1/16 in. thick, so placed that the slots in each are overlapped by the other sections. Differing from the usual practise, the rings are special soft steel and very elastic. The edges tend to carry sufficient oil to properly lubricate the cylinder, at the same time forming an oil seal. These rings cannot be used in two-cycle engines, and must not be placed in the top-ring groove of the piston, as the small sections would catch in the counterbore of the cylinders. Price per section: 2½ to 3⅛ in, 12 cents; 3 3/16 to 3¾ in., 15 cents; 3 13/16 to 4⅜ in., 20 cents; 4 7/16 to 6 in., 25 cents.—The Automobile Construction & Engineering Co., 45 N. 7th St., Philadelphia.

K-P

The K-P ring is made in three sections, with all joints evenly distributed and blocked by the other sections. Of the three, the inner ring is the heaviest, and has two raised ridges, one for each section of the outer rings to ride on. In action, the inner ring pushes the outer rings out against the cylinder walls, making them more flexible and creating equal expansion. Price: 2½ to 4 in., $1.10; 4 1/16 to 4⅞ in., $1.35.—Keys Piston Ring Co., St. Louis.

American Concentric Hammered

A single piece concentric ring, individually cast from special grey iron, having a stepped slot and ball peened on the inner face to produce the maximum spring and tension. The rings are made in all standard sizes from 1 in. to 36 in., and oversize if desired. Price: Ford rings, $7.50 per set of 12; 2⅞ in., 75 cents each; 3 to 3⅜ in., 90 cents each; 3½ to 3⅞ in., $1; 4 to 4⅛ in., $1.10.—American Piston Ring Co., Newark, N. J.

Tight-Wad for Ford

Two concentric rings, one thin and one thick, placed with the slots at opposite sides of the piston so that the opening in each is covered by the other, tend to prevent all gas leakage, even with worn cylinders. But one ring is needed for each piston, and the rings are made in the Ford size only. Price, each, $1.25. Set of four, $5.—J. Horat, 417 Ferry St., La Fayette, Ind.

Chopa

This is a compound concentric ring, and consists of an expanding spring-steel ring, carrying overlapping cast-iron ring sections that are held to the cylinder walls by the pressure of the steel ring. The ring is said to conform to worn or tapered cylinders, and to make them compression tight. Price, each: 3¾ in. or under, $1; 4¾ in. or under, $1.25;

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5¾ in. or under, $1.50.—Chopa Piston Ring Co., 264 E. Jefferson Ave., Detroit.

Wright Compression Tight

Two eccentric rings, one placed above the other and pinned so that the joints are about 90 deg. apart, causes an unbroken surface to be presented to the gases. Due to the eccentric form of each ring, an even pressure is exerted on the cylinder walls and uneven wear prevented. The rings are made of close-grained grey iron, machined on the outside, with the scale left on the inside to provide resiliency. Price, per complete ring: 0 to 3 in., 65 cents; 3 to 3½ in., 70 cents; 3½ to 4 in., 75 cents; 4 to 4½ in., 85 cents; 4½ to 5 in., $1.—V. A. Longaker Co., Indianapolis.

Hi-Comp

By the use of two eccentric interlocking rings, a single concentric ring is formed that is said to seal the combustion chamber, and to exert an even pressure on the cylinder walls. The rings are a special grey iron, ground to a finish under oil, and because of the peculiar form tend to fit out-of-round cylinders, and hence make reboring unnecessary. Price, all sizes up to 5½ in., $1.50 each. —Continental Piston Ring Co., Memphis.

Capitol

The feature of this one-piece eccentric ring is that though the interior surface is ground to a fine finish, the exterior is turned down with a finely grooved face, that is said to allow a quick and complete bearing on the cylinder walls. Each ring is individually cast, and has a 45-deg. mitre slot. These rings are furnished in all standard and oversize diameters from 2½ to 6¼, and in all standard widths. — Auto Engine Works, St. Paul, Minn.

Pondelick Anti-Leak

This compound ring is unique, the outer ring lying in a taper seat formed in the inner ring, thus tending to make the ring self-adjusting. The body of each ring covers the slot of the other, and by means of corrugated interlocking surfaces is held in that position. Because of these features, the rings are said to prevent oil pumping, and to adapt themselves, within reasonable limits, to cylinder irregularities. A special skeleton piston, styled the Pondalloy, is offered, and is fitted with Anti-leak rings. Price, up to 4 in., $12.50 each and $2 per in. additional above that size. Ford sizes, $36 per set. The rings sell for $1 each, from 2½ to 3 7/16 in., $1.25 from 3½ to 4½ in., and $1.50 from 4 9/16 to 5½ in.—Pondelick Piston Ring Co., 5100 W. 16th St., Chicago.

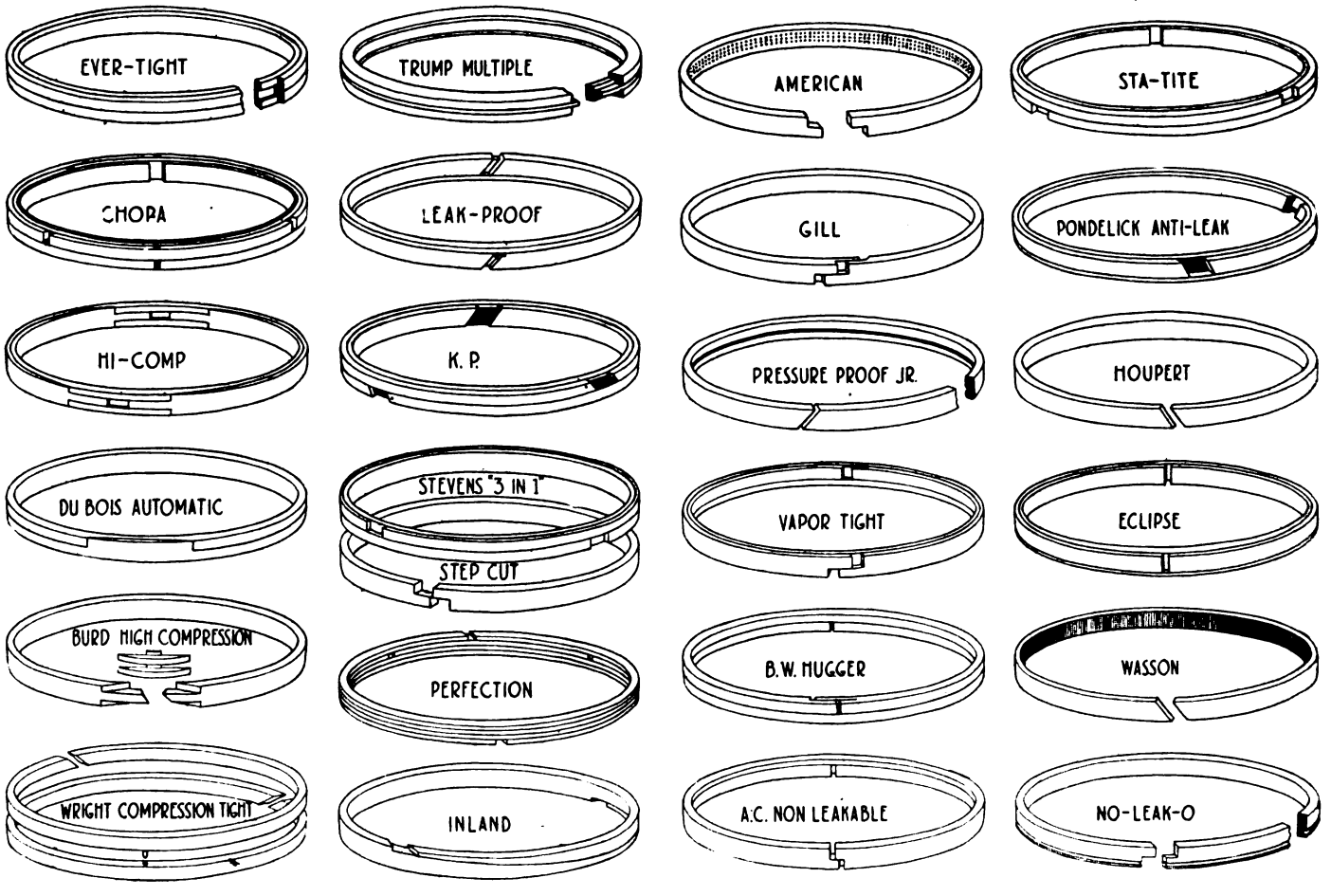
Trump Multiple

Composed of three sections, each section having equal resiliency, this compound ring, when assembled, is said to exert an even pressure on the cylinder walls, thus preventing eccentric wear. Each section is concentric, the inner having a T-section that holds the two outer sections. The rings are close-grained grey iron, seasoned for three weeks to remove warping strains, and ground to the final size with less than .001 in. tolerance. Prices, 2¾ to 4 in., $1; 4⅛ to 5 in., $1.25; 5⅛ to 6 in., $1.50.—Trump Mfg. Co., Crown Point, Ia.

Pressure Proof

Two types of rings are manufactured, the Pressure Proof and the Pressure Proof, Jr. The former is a three-part ring, consisting of interlocking cast-iron packing rings actuated by a steel spring placed in a bevel beneath the iron rings in such a manner that the ring constantly fills its groove. The Pressure Proof, Jr., is a two-part ring, one a cast-iron packing ring, the other a steel spring ring that gives resiliency. Prices of the Pressure Proof range from 96 cents each to $1.92, sizes from 2½ to 6 in. in diame-

Here Are 25 Different Types of Piston Rings



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ter; those of the Junior from 48 cents to 96 cents.—Pressure Proof Piston Ring Co., Boston.

Houpert

Of standard single-piece construction, these rings are cast iron, ground all over from individual castings, and are suited to high-speed motors. A specialty is made of regrinding cylinders, and fitting them with new pistons and rings, the pistons being either cast iron or aluminum alloy. Prices of the regular stock piston rings are 33⅓ cents each.—Houpert Machine Co., 351-355 West 52d St., New York.

Vapor Tight

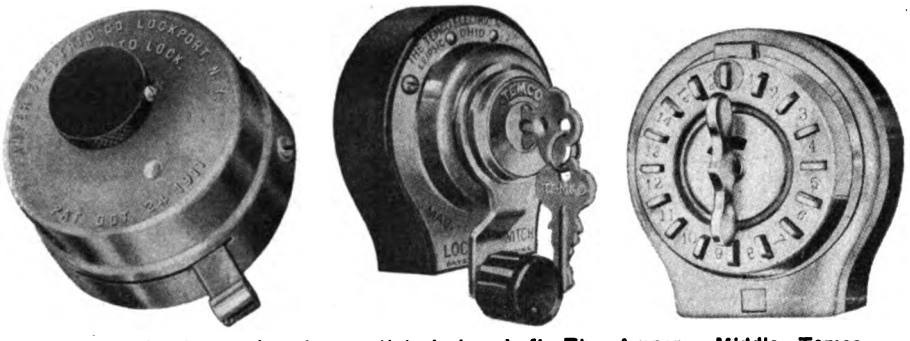
Though a two-piece, concentric-ring construction, the wearing surface of this ring is single. The outer section is L-shaped, and carries the smaller section in the space between the leg of the L and the piston wall, the opening in the outer ring being sealed by the inner ring. Both ring slots are stepped, to further prevent any compression loss, and it is stated that two complete rings on each piston will effectively prevent any losses past the piston. These rings are made in all sizes for all engines.—Baker Valve Co., 1855 East 28th St., Minneapolis.

Du Bois Automatic

Composed of two concentric unit members, fitted one around the other, the slots of these rings are sealed against gas leakage. The larger bottom ring is L-shaped, and carries the smaller ring in its lower recess, and is beveled at the slot to permit the extended and raised edge of the smaller ring to seal the opening. Rings are made in all standard sizes up to 4½ in., selling for $1.50 each. —Du Bois Machine Shop, Inc., 118 Hudson Ave., Albany, N. Y.

Wasson

This is a single piece, concentric cast-iron ring, having a mitred joint and peened on the inner surface to increase the life of the ring. The rings are made in all standard sizes, and either .015 or .030 in. oversize, for rebored cylinders. A specialty is made of the Ford size, these selling for 35 cents each.—Lake Sales Co., 1974 Broadway, New York.



Two combination and a key switch lock. Left—The Amper. Middle—Temco. Right—Quale

Stevens NonSet

Three styles of rings are offered, namely, the Mitre Cut, one-piece eccentric ring, the Step Cut one-piece eccentric ring, and the "3 in 1," a compound ring consisting of two outer rings held by a slotted inner ring. These rings are individual castings, ground on the outer face, and the inner face left intact, incorporating the original skin of the casting, as this increases the resiliency. Prices of the single-piece rings range from 25 to 40 cents, the "3 in 1" from $1 to $1.50, according to size and quantity.—Stevens & Co., 375 Broadway, New York.

Eclipse

Composed of two parts, one an L-shaped eccentric ring, with a straight joint, the other a concentric flat ring with a straight joint; the two members are so assembled that the joints of the one are covered by the other ring. These rings are high-grade cast iron, accurately machined, and in sizes suitable for all of the principal makes of cars. Price, all sizes, $1 each.—Auto Appliance Co., 1960 Broadway, New York.

A. C. Non-Leakable

Two-ring elements enter into the construction of this ring, an outer and an inner ring. The outer ring is L-shaped, concentric, and fits over the smaller inner ring, the joints of the two being placed at opposite sides of the cylinders to prevent leakage. As a further insurance against compression losses, the joint of the outer ring is stepped and made a close fit, as are the two-ring elements. Price, each: 2⅝ to 4⅞ in., 3/16 or ¼ in. wide, $1; 5 to 6 in., 3/16, ¼ or 5/16 in. wide, $1.25.—A. C. Non-Leakable Piston Ring Co., Compton, Ill.

Ever-Tight

This is a three-piece concentric ring, the inner ring fitting into the piston groove, has a channel section and carries a smaller grooved ring on each of the channel edges. All slots are covered by the body of the adjacent ring, and due to the channel section, gas leakage is reduced to a minimum. Price, each, standard widths: 3 to 3⅞ in., $1.50; 4 to 4⅞ in., $1.65; 5 to 6 in., $1.80.—Ever-Tight Piston Ring Co., 1424-26 Chestnut St., St. Louis.

Sta-Tite and Quality

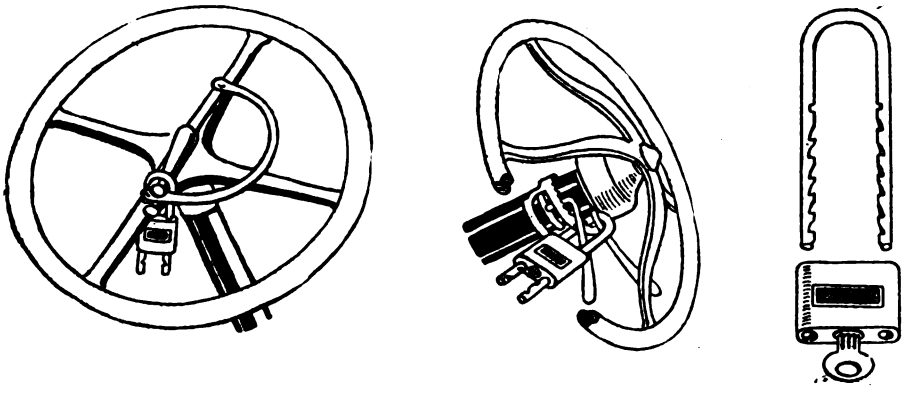
Two types of rings are supplied, the "Sta-Tite," a compound compression type ring, and a single-piece ring styled the "Quality." Both are individually cast from close-grained grey iron of special analysis, and machined to an accurate finish on machins designed for that purpose alone. Price, Sta-Tite, each: 2½ to 3⅞ in., $1; 4⅛ to 5 in., $1.25.—The Piston Ring Co., Muskegon, Mich.

Bridgeport

A single-piece ring of the eccentric type made from individual castings of fine grey iron. The rings are rough machined on all over, heat treated to remove all strains and prevent warping, slotted and formed, and then ground with the ends closed in a special fixture to fit the exact bore of the cylinder. A specialty is made of reboring cylinders and fitting new pistons and rings. Price each: 2½ to 3 7/16 in., 32 cents; 3½ to 3 15/16, 34 cents; 4 to 4¼ in., 38 cents; 4 5/16 to 4½ in., 42 cents; 4⅝ to 5 in., 46 cents.—Bridgeport Piston Ring Co., Bridgeport, Conn.

B. & W. Hugger

This is a compound ring, made up of two eccentric rings, placed one on top of the other in the ring groove, with the slot of each overlapped by the body of the other. A special lap-joint construction is used in fitting the ends of the rings, the ends being stepped and scarfed to make a tight joint and the rings are peened to promote resiliency. These rings are made chiefly in the Ford size, 50 cents each.—Hallman-Whitten Mfg. Co., 4060 Forest Park Blvd., St. Louis.



The Evans lock has a polished brass body, and tempered steel shackle. It locks the spark and throttle levers to the steering gear. The price, $1

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Locks

Slaymaker

There is a padlock with a shackle 7 in. long. The shackle is a hardened-steel rod and springs into place with a quarter turn. The case is heavy pressed steel, black enameled. Two keys are furnished. The Fordloc is designed to lock the ignition levers of the Ford and has a bronze metal shell and shackle.—Slaymaker Lock Mfg. Corp., Lancaster, Pa.

Guardian Robe-Lock

A simple device for holding any loose articles, such as robes or overcoats to the robe rail. It consists of two jaws which may be locked in place around the robe rail and the robe. It is provided with a combination. Price $1.—Mechanical Products Co., 332 Citizens Bldg., Cleveland.

Sly Tire Lock

This lock is designed for the special cradle type tire holder which is made for Fords exclusively. It consists of a hinged clamp which passes around and above the tire at the bottom of the holder.—New Era Spring & Specialty Co., Detroit.

Evans

A padlock with a long shackle designed for locking the spark and throttle levers on the steering gear. It is polished brass and the shackle is tempered steel. Price $1.—B & E Lock Co., Des Moines, Ia.

Powersteel Autolock

It consists of 4 ft. of Yellow Strand wire rope wrapped in a strong, waterproof cord fabric, and a padlock. It may be used for locking tires or other articles or for locking the car itself by passing the cable through, around the rim of the wheel and the frame. Price, $2.—Broderick & Bascom Rope Co., St. Louis.

Quale

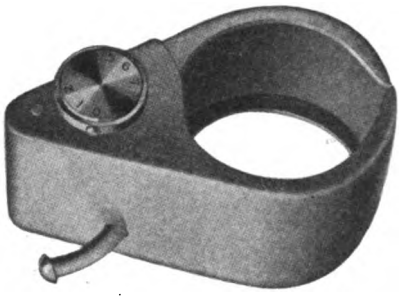
Keyless ignition lock for Ford cars only. It has 15 buttons which may be set and changed at the will of the owner. Any given number of buttons from 1 to 15 must be pressed to open the lock. There are more than 30,000 combinations available. The installation is simple, and any owner can attach the device in five minutes, it is said. The screws that are used in attaching it are covered by the lock so that they cannot be tampered with. Later it is planned to bring out locks for other cars. Price $5.—Quale Mfg. Co., 20 W. Jackson Blvd., Chicago.

K-W Autolock

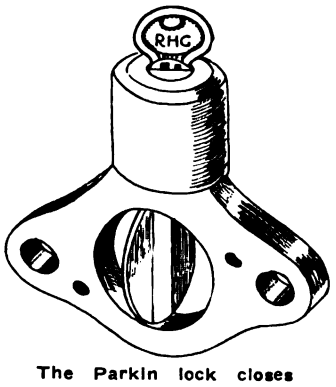
This switch is designed for any make of car provided with a dash coil, and takes the place of the ordinary switch. It may be attached in 5 min. with a pair of pliers and a screwdriver. Each switch is provided with a Yale lock and three keys. Price, $3.50.—K.-W. Ignition Co., Cleveland.



The Blackburn panel switch controls both ignition and lighting circuits



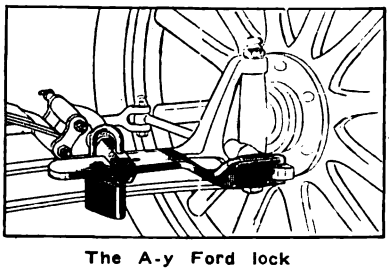
Guardian Robe-Lock



The Parkin lock closes the intake manifold



The Powersteel Autolock



The A-y Ford lock

Johnson

The gearshift lock with the lock mounted in the gear lever is adaptable to all machines operated by a central ball control lever, and the installation may be made in a moment. The lever is made of hardened steel and cannot be removed without the aid of an electric drill. The lever is locked by removing a key. The lock itself is a Yale cylinder. Price $10.—Utility Mfg. & Advertising Co., 2101 S. Michigan Ave., Chicago.

Amper

An ignition lock which may be mounted on the cowlboard or floorboard and is opened by a combination. The switch may be locked either "on" or "off." Price $5.—Amper Electric Co., Lockport, N. Y.

Blaco

A new panel board has been brought out with lock for controlling both the lighting and ignition circuit. It is approximately 3 x 6 in., and will contain an ignition lock switch, a lighting lock switch, both being controlled by a Yale key. Thus the car may be left standing at any time and no one can tamper with either lights or ignition. There is a standard dash or flush type lock for battery or magneto circuits and also a reversing polarity type such as used in connection with Atwater Kent and Remy ignition. A special design is made for Reo cars to fit the steering-column control. A special design is made for the Ford. The price of all locks is $3.50 and the panel board is $5.—Blackburn Specialty Co., Cleveland.

Motor Lock

This lock resembles a micrometer caliper in that the main part is semi-circular in shape and is provided with a sliding plunger which may be locked in any position, thus it may be used for locking robes to the robe rail, or if the plunger is pushed in all the way it may be used for locking the steering wheel and spark and throttle levers. Price $1.75.—Robe Lock Co., 1853 38th Ave., Oakland, Cal.

Buick Lock

Gearshift locks are made for 1914-1917 Buicks, and the new model may be installed in 10 minutes without removing any part of the transmission or even taking up the floor boards. Price $6.50.—The Northside Buick Sales Co., 918 Sheridan Road, Chicago.

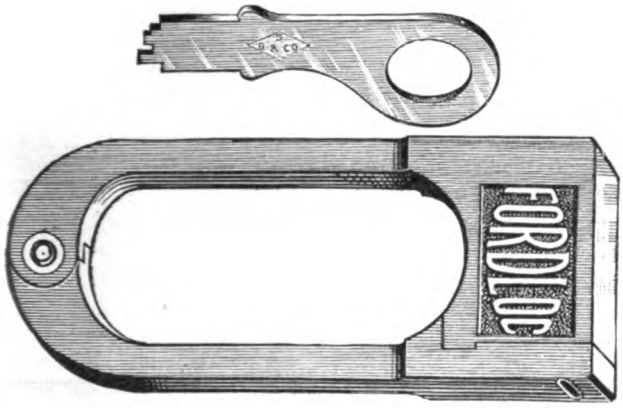
Backus

The Backus Utility autolock may be used in a number of ways for locking spark and throttle levers to the wheel; robes and coats to the rail; robes on the radiator; suit cases to the foot rail, etc. Price $1.—Backus Novelty Co., Smithport, Pa.

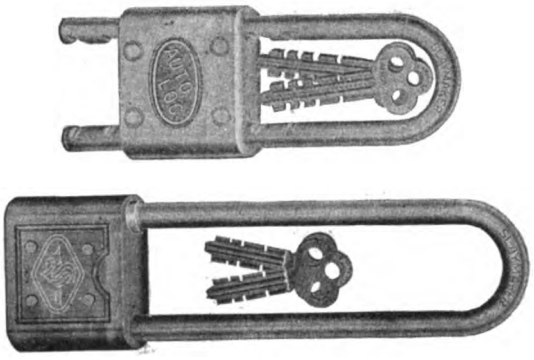
Temco

The Temco Lock switch is for the Ford, and combines a kick switch and key. It fits any Ford coil, may be installed by anyone in a few minutes, and sells for $3.50.—Temco Electric Motor Co., Leipsic, O.

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The Slaymaker Fordloc, locks the ignition levers



Two Slaymaker car locks

Goodrich

A Ford ignition lock which replaces the brass plate that regularly covers the Ford ignition switch. Once installed, it cannot be removed except by the use of a key because a turn of the key which locks the lock, also covers the screw heads with concealed metal shutters. Thus it is screwdriver proof and it is unpickable because a Yale lock is used.—Goodrich-Lenhart Mfg. Co., Widener Bldg., Philadelphia.

Thiefoil

This lock is for Fords only, and acts on the ignition. It is so constructed that it may be readily applied to the face of the standard Ford switch without any changes in the wiring. No special tools are required, and the work requires only a few minutes. It is a combination lock with three operating buttons projecting from the top, each of these buttons must be pressed the correct number of times in order to open the lock, and the buttons are large enough so that they may be operated with gloves on. It only requires a second to open it. To lock it, it is merely necessary to press any one of the buttons; there are more than a thousand combinations, and the user may change the combination very readily. It sells for $3.50, and is finished in black enamel with buttons and center handle in nickel.—Caskey-Dupree Mfg. Co., Marietta, O.

Syracuse

A switch lock applicable only to the Ford ignition system is made. The switch handle forms the key. No two keys are alike. There are three keys with each lock and additional keys may be ordered by lock number. The lock is readily attached and when replaced cannot be removed by any one not possessing a key. —Syracuse Universal Mfg. Co., Syracuse, N. Y.

Perry

This lock is unusual in that it throws the steering wheel out of action. When the lock is set it is impossible to control the wheels, the steering wheel spinning around freely. Thus the car cannot be towed or driven away. The lock for Fords is a neat device which is placed directly under the steering wheel and is not in the way. For other cars the lock requires the substitution of a new steering wheel. The Ford lock sells for $5.—Perry Auto Lock Co., Chicago.

Parkin

With this lock it is impossible to start the engine, inasmuch as it closes the intake manifold. It is applicable to all cars and is equipped with a Yale lock.



The Thiefoil lock is for Fords, and is combination button operated

There is a special model for Fords.—Parkin-Meeley-Lineaweaver Co., Inc., 2417 N. Broad St., Philadelphia.

A-Y Ford Lock

This device locks the front wheels and is attached to the steering knuckle. Price $3.50.—Angsten-Kock Co., 215 Englewood Ave., Chicago.

Lock-All

An electrical switch equipped with a Yale lock controlling lights, ignition and electric horn all with one key. It is equipped with a large central knob which when kicked directs the current to the head or side lights. When the key is turned the lights are locked in any combination, either on or off. The battery, ignition and electric horn circuits are broken and the magneto is grounded. The kick-over switch affords a ready means for dimming the lights. Price $12.—H. P. B. Electric Co., 30 East 42d St., New York.

Pliers

Lakeside Pliers

Drop forged from high-grade steel, tempered and machined, these 6-in. combination slip joint pliers are suitable for repairshop work. Three kinds of finish are offered, plain black, $4.80 per doz.; oil finished, $7.20 per doz. and full finished, $8.40 per doz.—Lakeside Forge Co., Erie, Pa.

Athol Combination Pliers

By the combination of the common flat plier, and the gas plier into one tool, a useful tool is formed. The long flat nose is well suited for the removal or replacement of cotter pins, or any work in tight quarters, the circular toothed jaws for holding nuts, or for light pipe work. Price 5 in., 60 cents; 6 in., 70 cents, and 7 in., 75 cents.—Athol Machine Co., Athol, Mass.

Kit Multiple Head

Kit pliers are made in two parts, handles and heads, the heads being changed to suit the requirements of the work. The interchangeable heads fit into a socket in the handle, and are held by means of an adjustable wing nut and set screw. Kits are supplied for all sorts of uses, the automobile kit consisting of a pair of handles and six heads as follows: Leather punch, pincers, alligator wrench, combination head, flat nose, cutting and gas pliers, gimlet and drill holder, tinner's snips and close cutting nippers. Price, packed in tool roll, $3.75.—Currier-Koeth Mfg. Co., Coudersport, Pa.

Westhaven Patent

By means of a set screw located in one of the arms, the jaws of these pliers may be set to the size of the work, permitting the handles to be placed at the point that gives the operator the greatest leverage. One jaw is milled so that it may be used as a ratchet wrench, or to hold wire; and a wire cutter is incorporated in one side of the barrel. Prices are: No. 9, 6½-in. black handle, polished jaws, 65 cents each. No. 18, 8½ in., full polished, 90 cents. West Haven Mfg. Co., New Haven, Conn.

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Athol
Red Devil, Type 1226
Vichek Combination
Pexto Diagonals

Bridgeport Combination

A plier for general use, combining a flat-nose plier with a reamer, screwdriver, two shear wire cutters, side cutter and burner grip jaw. They are drop forged, with oil-finished handles and highly polished jaws. Price, 6 in., $12 per doz.—The Bridgeport Hardware Co., Hardware Mfg. Corp., Bridgeport, Conn.

Pexto Diagonals

For electrical work, removing or replacing cotter pins, these pliers will reach into places that are otherwise inaccessible. They are forged and tempered. Price, 4½ in., per pair, 65 cents; 5 in., 70 cents. A complete line of pliers is carried.—Peck, Stow & Wilcox Co., Southington, Conn.

Oswego Combination

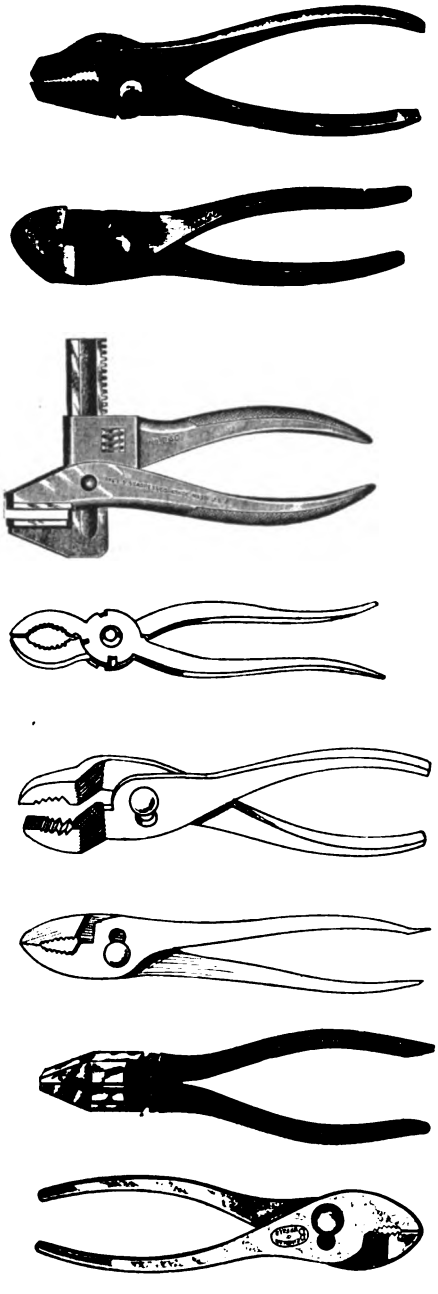
Large capacity is combined with a small size in these combination, slip-joint pliers. The handles are so formed that when closed they occupy but little space, and the entire construction is as light as is consistent with strength. All parts are interchangeable. Price, 6 in., polished, $13.50 per doz.; 8 in., $16 per doz.; and 10 in., $18.—Oswego Tool Co., Oswego, N. Y.

Reliance

Incorporating two wire cutters, a wrench and screwdriver, these combination pliers have a saw-toothed jaw that permits a large parallel grasping surface suitable for holding round, square or oval pieces up to 1¼ in. diameter. Handles are broad, so that the hands are not cut by the greatest pressure, and the tool is drop forged and tempered. Price, No. 478, 7 in., per doz., $13.50.—Kilborn & Bishop Co., New Haven, Conn.

Starrett Patent Extension

The distinctive feature of these pliers is that one of the jaws may be adjusted to suit any piece, straight or tapering, from 0 up to 1¼ in. Adjustment is made by a worm screw, and permits the handles to always be in the position of maximum leverage. As the jaws are always parallel, the pliers may be used as a wrench. Price, No. 240, plain, $2; nickeled. $2.25.—L. S. Starrett Co., Athol, Mass.



Reliance
Hjorth Bent Nose
Starrett Patent Expansion
Worden's Combination
Gittatit
Oswego
Bridgeport
Bergman Buffalo

Worden's Combination

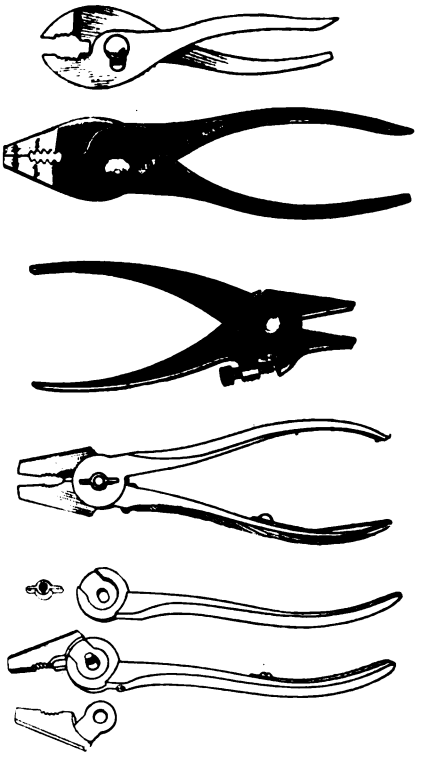
Fifteen tools are combined in one in this plier. The tool may be used in all work on cotter pins, as a pipe wrench, wire cutter, screwdriver, wrench, belt punch, as well as in the multiple uses of the common plier. It is highly finished, and guaranteed. Price, $1 each.—E. M. Worden, Ladysmith, Wis.

Bergman Combination

Drop forged from 60-point carbon steel, fully tempered, holed drilled before punching to insure free working, tempered bolts to add to strength, cup-ground bearing surfaces to eliminate friction, preserve alignment, and insure long life, these 5-in. combination pliers are guaranteed, and will be replaced if any part is found defective. In addition, a complete line of side-cutting, bent-nose and lineman's pliers is carried.—Bergman Tool Mfg. Co., Buffalo, N. Y.

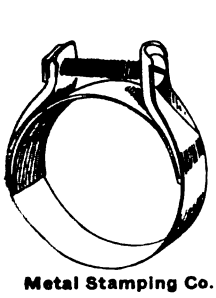
Red Devil

Three types of combination pliers are made that are particularly suited for the motorist and repairman. Style No. 1225 is extra heavy construction, with adjustable jaws for handling nuts, bolts, etc. Each tool sells for 85 cents, and is guaranteed to give satisfactory service for two years, or will be replaced. Style No. 1226 has a curved lower jaw, designed to firmly grasp irregular objects. This is an extra heavy tool, is polished and nickle plated, and carries a 2-yr. guarantee, selling for 85 cents. The third style, No. 1024, is of the thin-nosed type,

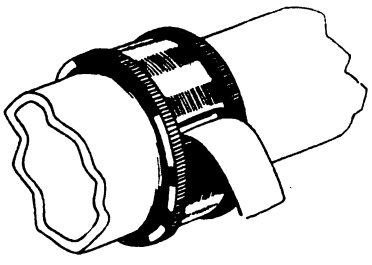


Lakeside
Buffum
Westhaven
Kit Detachable Head, assembled
Kit Detachable Head, apart

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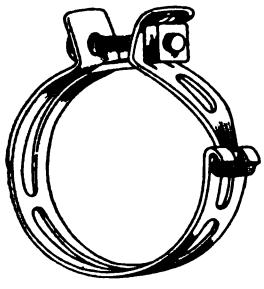
Metal Stamping Co. Adjustable



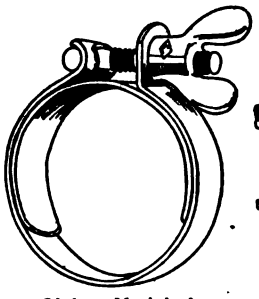
Herz Tape Grip



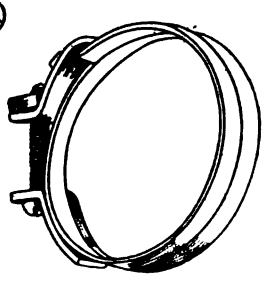
Bartlett



Thompson



Globe—Model A



Globe—Model B

forged from highest grade steel, and is adapted to reach into tight quarters. Price, each, 55 cents.—Smith & Hemmenway Co., Inc., 99 Chambers St., New York.

Gittatit

An offset combination, slip-joint plier, designed specially for repairshop work. Because of the offset jaws the pliers may be used effectively as cotter-pin pullers or as a wrench to reach into out-of-the-way places. A wire cutter and gas-pipe jaws are incorporated. Price, temper finish, polished jaws, 7 in. over all, per doz., $5.50.—The H. D. Smith & Co., Plantsville, Conn.

Hjorth's Bent Nose

The nose of this plier is bent, forming an angle with the handles that permits a grip to be obtained on work otherwise inaccessible. A slot cut in the nose of the jaw renders the pliers handy in inserting or removing cotter pins. In construction, the pliers are drop forged, and either supplied in the black finish or highly polished and nickel plated. Price of the 6-in., nickel plated, $10.50 per doz.; black finish, $9.25 per doz.—Wm. Hjorth & Co., Jamestown, N. Y.

B. & S.

Combination pliers have slip joints and are in three types, Nos. 0, 1, 2, having short curved handles; No. 3, longer handles, and No. 4, the longest. Slip box joint pliers with wire cutters, 6 in., and Hayden wire cutters and gas pliers combined with interchangeable tool steel cutters, 6 in., are also made.—Billings & Spencer, Hartford, Conn.

Dreadnaught and Victor

This line of pliers is extensive; among those adapted to motor car work is the Dreadnaught of the flat-nose type of chrome nickel steel, side-cutting box joint, hand fitted; cutters will cut tempered steel wire; rivets electrically riveted and hardened, handles are corrugated in an ornamental pattern. The Victor universal has one jaw curved and the other straight, hardened gripping teeth, wire cutter on handle side of joint. Slip joint side cutting, nickel plated, two wire cutters which will cut 8-penny box nails, 7 in., 6-in. combination pliers, slip joints, wire cutter in throat nickel and black, are also made.—Kraeuter & Co., Inc., Newark, N. J.

Vlchek

A cast-steel, drop-forged combination plier, made either in the natural finish, mottled finish, ebony finish, or nickel plated. Price, 5 in., natural finish, $3 per doz.—Vlchek Tool Co., Cleveland.

Buffem Combination

Made with a thin nose to get into places that the ordinary pliers will not reach, these pliers are drop forged, milled in all parts, and are adjustable by means of a slip joint. The jaws are knurled to prevent slipping, and properly tempered; the handles are corrugated to give a good grip. Price, 6 in., black finish, 50 cents each; nickel finish, 75 cents each.—Buffem Tool Co., Louisiana, Mo.

Hose Clamps

Apco

Made in two pieces, for Fords only, for convenience in attaching and removing. Tightens the hose evenly and prevents leaking. Galvanized to prevent rust. Price 5 cents each.—Auto Parts Co., Providence, R. I.

Globe

Two styles of hose clamps are the A and the B. A has a wing nut and a T bolt, allowing for quick attachment and detachment, and B consists of a double wind of flat steel wire which insures an even, velvety connection. The former is sold to jobbers and manufacturers and the latter only to manufacturers in quantities of not less than 5,000.—Globe Machine & Stamping Co., Cleveland.

Herz Tape Grip

The tape is wound around the hose with the aid of a metal ring which has a slot through which the tape is fed as the ring is turned. The diameter of the ring is slightly greater than that of the hose, and when the layers of tape fill the space the ring tightens upon them and compresses the joint. The ring has a slot on one side allowing the end of the hose to slide against it. It can be disconnected by turning in the opposite direction. Price, ⅞ in., 20 cents, up to 4 in., 70 cents.—Herz & Co., 245 W. 55th St., New York.

Catelain

This is a metal hose clamp adjusted by a wing nut, and is built in three sizes. No. 1 fits ¾ to 1½ in.; No. 2, 1¾ to 2½ in.; No. 3, 2¾ to 4 in. Prices, 25, 27 and 30 cents respectively.—Andre G. Catelain, 1446 Indiana Ave., Chicago.

Sherman

Brass hose clamps with band pliable enough to hug the hose, and the ends stiff enough to stand the strain of screwing tight. Per dozen, $2 to $3, depending on size, which varies from ½ to 3 in.—H. B. Sherman Mfg. Co., Battle Creek, Mich.

Yerdon

These cast-brass hose clamps have a shoulder on each lug so that the clamp can be squeezed tight on the hose in a vise. The clamp is held by a single screw and the material is flexible enough for considerable range of adjustment. All sizes up to 3 in. are made. ½ to 2½ in., $1.50 to $8.50 per doz; special sizes, 2⅛ and 2⅜ in. inside diameter are made for Fords, on order only.—William Yerdon, Fort Plain, N. Y.

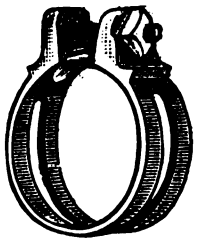
Lightning

A two-piece sheet-metal clamp locked on one side and adjustable by screw and nut on the other.—Harrisburg Stamping Co., Harrisburg, Pa.

Morgan

Several styles of hose clamps are made, the type No. 7 being a single steel wire which is drawn tight by a thumb screw (prices 8 to 16 cents) mounted in a small brass casting. Type 10 consists of a perforated brass band which is drawn tight by a thumb screw. The perforations allow for coarse adjustment and the thumb screw for fine adjustment, thus the device will fit any size hose. Prices 10 to 24 cents. Another design consists of a sheet-brass ring, split and drawn tight by a screw and nut. Price $5 per 100.—Morgan Mfg. Co., Newport, R. I.

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Yerdon


Ideal


Catelain


Apco


Harrisburg



Crabill

Adjustable

This hose clamp is made a semi-circular piece of high-tempered steel, is drawn together by screw and nut. It provides even bearing all around the hose.—Metal Stamping Co., Long Island City.

Thompson

This clamp is made in two pieces, the larger being about ¾ in. in circumference, the two parts are joined at one end by a hook and at the other end by a bolt. The prices vary from $3 per hundred for the 1 in. to $7 for the 2½ in.—Newark Stamping Co., Newark, O.

Allen

These clamps are of heavy galvanized sheet steel with ends turned up for the fastening bolt. Small lugs are formed near the bolt lugs to afford a hold for vise jaws when closing the vise on the hose. A tongue spans the opening of the joint to prevent wrinkling. All sizes are made. A feature of the clamp is that the galvanizing is put on by an electroplating process as ordinary galvanizing methods have been found unsatisfactory. The 1½ and 2½ in. sizes are the ones most in demand.—W. D. Allen Mfg. Co., 133 Lake St., Chicago.

Ideal

A hose clamp made in two pieces of sheet metal, the two being locked together at one end and drawn tight with a screw and nut. There is a long tongue to prevent wrinkling of the hose. Ideal Clamp Mfg. Co., 200 Bradford St., Brooklyn, N. Y.

Elk

This hose clamp is a ribbon of brass arranged for clamping tightly by a stud and nut. Eight to 32 cents each in 1 to 3 in. sizes.—Elk Mfg. Co., 68 East 131st St., New York.

Crabill

A sheet-metal clamp made in two styles with a tongue to prevent wrinkling of the hose at the gap and a screw for drawing the clamp tight. The clamp is made in both brass and steel.—Crabill Hose Clamp Co., Battle Creek, Mich.

Bartlett

A one-piece hose clamp with a tongue to span the gap and tightened by a screw. By means of a longitudinal slot the clamp encircles the hose twice and when tightened the pressure is even at all points. It is made in a variety of sizes, the price for hose 1 11/32 in. inside diameter being $2 per dozen in brass and 60 cents in galvanized steel.—Bartlett Mfg. Co., 40 Lafayette Ave., Detroit.

Wire Wheels

Houk Quick-Change

This is a triple-laced wire wheel held in place by the hub cap, and driving strain is transmitted through several lugs in the hub shell. To remove the wheel it is merely necessary to unscrew the hub cap; the hub is securely locked in place and it is only unlocked when the wrench is on. The wheel hub is substantially mounted on the inner hub member by being clamped or wedged between two opposing taper cones, the outer taper being provided by the hub cap. In addition to the automatic locking device on the hub, the hub is threaded so that any tendency for the wheel to move only draws the hub cap tighter. The wheels are furnished with plain clincher rims, Q.D. clincher or Q.D. straightside, in sizes from 30 x 3 to 38 x 5½. Wheels are enamelled in various colors and these colors are carried in stock. The wheels are made for all standard models. Prices vary from $120 up to $160. Black enamel is standard, colors are $10 extra. This price includes 5 wheels with any type of rim, four inner hubs, one for each axle end, four hub caps, dust cover for spare wheel and wrench. In case equipment is desired for cars not listed in the catalog, detailed information must be furnished regarding the hub construction.—Houk Mfg. Co., Buffalo, N. Y.

Hayes

These wire wheels are triple laced and their features are strength and good appearance. The wheel is almost instantly removed by simply unscrewing the hub cap. When the hub cap is in place it is securely locked and is only unlocked when the hub-cap wrench is on it. Driving is accomplished through six driving locks, which engage the inside shell of the hub. —Hayes Wheel Co., Jackson, Mich. Castle & Kyte, 872 Woodward Ave., Detroit, selling agents.

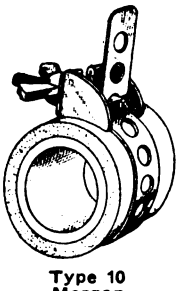
Spranger

The feature of this wheel is the use of a demountable rim instead of demounting the whole wheel. It is made for Fords and Chevrolet cars, but wheels for other cars will be made on contract. The demountable rim is held in place by six wedge lugs. It is said that it is impossible for these to come loose, due to the use of a special nut which has recently been patented. The set includes four wire wheels, one extra rim, complete with bearings, brake drum, hub caps and wrench for removing the rims. Price, $37.50; in black, red, green and canary, $1.50 extra. White enamel, $4 extra.—Spranger Wire Wheel Co., Detroit.

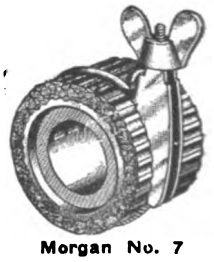
Universal

Wire wheels for Ford cars exclusively are manufactured, and the feature is that they may be had either in 56 or 60-in. tread. The wheels are demountable, the drive being transmitted through lugs on the inside of the wheel. The drive is through 10 lugs on the hub shell dovetailed into ten holes in the driving plate. The locking device consists of an elliptical spring, the ends of which project through the hub, which operates with a cam action on the hub proper. By revolving the elliptical spring in a quarter circle the cam action causes the projecting points to recede into the hub allowing the wheel to slip off easily. The hub cap is provided with a locking device which engages the spring. The complete outfit includes five wheels, two front hubs complete with ball cups and retainers and two rear hubs with brake drums, front and rear wheels are interchangeable. Price, 30 x 3½, $40; 32 x 3, $45; 28 x 3, $45; 60-in. tread, $5 extra.

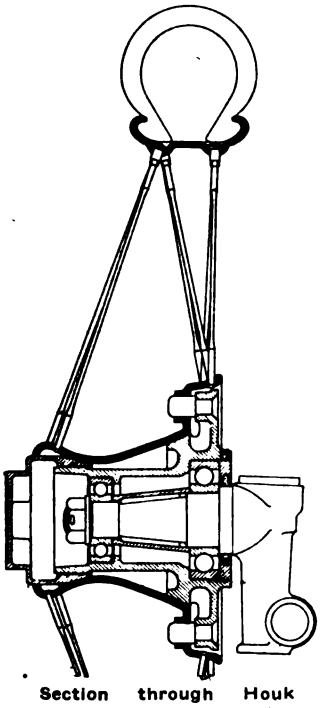

Sherman


Type 10 Morgan


Morgan Standard


Morgan No. 7

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Section through Houk wire wheel. The wire wheel hub is shown in black

Black is standard, other colors $3 extra. —Universal Welding Co., St. Anne, Ill.

Lindsay

Wire wheels for Fords alone are manufactured, a new feature for 1917 being a wheel with a demountable rim. There are four wheels and one extra rim in a set. In addition, clincher rim wire wheels, not demountable, are furnished complete in sets of four. The wheels are complete with ball bearings, brake drums, hub caps, and are ready to attach without machining. Price, $45. Speedometer attachment ring, $1 extra. Price of wire wheels, not demountable, $35.—Great Western Mfg. Co., La Porte, Ind.

Rudge-Whitworth

This wire wheel is a triple-laced design, in which the driving strain from hub to wheel is taken by fine teeth or serrations cut in the hub and in the adjoining surface of the wheel, thus the teeth of one mesh with the other. The two may be compared with an internal, external gear. The wheel is held in place by a locking ring, thus the hub cap merely acts as a cover for the ball bearings to exclude dirt and moisture. All sizes are made.—Standard Roller Bearing Co., Philadelphia.

Kelly Wire Wheel

This wheel is of conventional form, but it can be removed or replaced in 6 seconds, it cannot stick, it cannot be thrown off the hub, the hub cap is not called upon to do any work but is merely a dust cap. There are three parts—the wheel, the hub and the hub sleeve. There are lugs on the hub and the wheel, and the two are securely locked by the driving sleeve, which slips in between the two. The sleeve is retained by a spring plunger, and then as an additional safeguard and to keep dust out, the dust cap is screwed in place. To remove the wheel it is merely necessary to unscrew the dust cap, pull out the driving sleeve, give the wheel a quarter turn and pull it off. Replacement is just the opposite. The dust cap is so arranged that it may be removed with a monkey wrench. The wheel is a standard triple-laced type with Goodyear rim. It is made in all sizes, including Ford, and is priced about the same as other high-grade wheels.—Craftsman Motor Corp., 2815 Wabash Avenue, Chicago.



The Spranger wire wheel has demountable rims



The Kelly wire wheel may be removed or replaced in an instant, and is positively locked in place by a snap pin

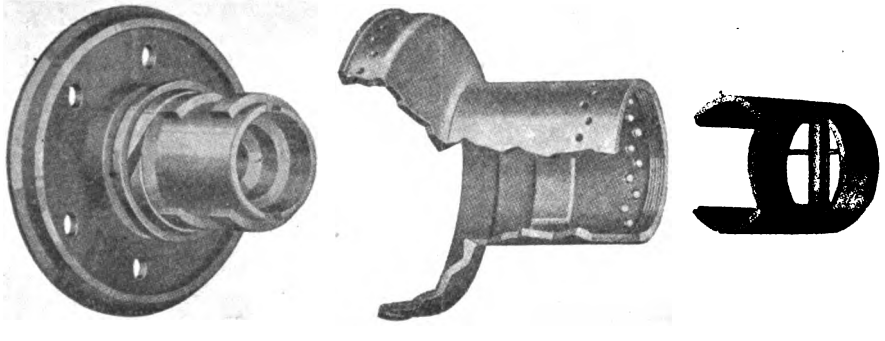
Bearings

Timken

Timken bearings have tapered rollers which are separated from each other by a pressed steel cage. The rollers are grooved at the smaller end and there is a track on the inner cone into which these grooves fit. This track or rib, together with one on the other edge of the inner cone, keeps the roller straight. The best method of adjustment is to turn the bearing upside down and then revolve the wheel a few times by hand. Then back off the adjusting nut very slightly, so that by grasping opposite spokes in a perpendicular line, it is possible to feel a very slight shake. Gear bearings should be turned up to a snug fit but not so tight as to prevent the gears from turning freely. Any light grease or heavy oil will serve as a lubricant provided it is free from acid or alkali.—Timken Roller Bearing Co., Canton, O.

Bock

Taper roller bearings which are carried in a substantial cage which not only acts as a separator but also holds the rollers in position with reference to the two cones. All the advantages of both ball and roller bearings are combined in this dessign, it is said. It is particularly adapted to carry heavy thrust loads and since the cage is a solid piece of metal, it cannot be distorted nor is there any danger of it failing. The bearing end of each Bock roller is a segment of a perfect steer so that end friction is practically eliminated as the rollers roll against the inner race, the same as would be the case in a thrust ball bearing.—Bock Bearing Co., Toledo, O.



The three locking parts of the Kelly wheel. At the left is the hub, rigidly attached to the axle. In the middle, the detachable hub, attached to the wheel, and at the left the locking sleeve, carrying the locking pin

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Standard

Ball and roller bearings of all descriptions are manufactured. Taper roller bearings consist of plain taper rollers mounted in a substantial cage. Thrust is taken directly on the large ends of the rollers, there being a shoulder on the inner cone to stand this stress. Cylindrical roller thrust bearings and radial load bearings are made in a variety of styles and Standard annular ball bearings with ball separators, full type annual ball bearings without separators and ball thrust bearings are produced.—Standard Roller Bearing Co., Philadelphia.

Auburn

A full line of bearings is produced including ball thrust bearings, annular ball bearings, special ball bearings and in addition, tool or alloy steel balls are manufactured. The feature of the ball bearing construction is that a separator is not used.—Auburn Ball Bearing Co., Rochester, N. Y.

Hyatt

This roller bearing is designed for radial loads only and consists of a series of rollers carried in a cage and working between an inner and an outer race. The rollers are spirals and are hollow. This construction giving flexibility and providing for thorough lubrication, inasmuch as the interior of the roller will carry grease. A feature of the bearing is that it is self-cleaning because the spiral slots in the rollers provide a means by which the dirt appearing on the race surfaces may make its way to the inside where it will do no harm. Quietness is obtained because of the fact that the rollers are flexible and can absorb the vibrations. Another feature of the flexible roller is that it allows full line contact.—Hyatt Roller Bearing Co., Detroit.

George Automatic

Automatic adjustment to compensate for variation in actual roller diameter so that when assembled, each roller presents exactly the same working diameter thereby assuring uniform wear and equal distribution of radial and thrust loads is the feature of this new bearings. Briefly, it is a taper roller bearing with the ends of the rollers turned down so that balls may be used for spacing. When the bearing are mounted and tightened in place the rollers have not yet assumed their working positions but with a half turn the pressure on the large rollers causes them to creep back forcing the adjacent balls further apart. This pressure is equalized by other balls closing in at the other end which forces them upward until all present the same working diameter between the cup and cone. Another advantage of this bearing is that it eliminates the cage. The bearing may be completely taken apart without the use of tools or the springing of any parts. The first ball is dropped out of a small hole in the periphery of the large race ring, then the rollers may be pushed to one side and other balls removed. Since it is possible to remove the first ball only after the cup has been removed from the cone assembly and the roller swung away from the cone proper to the limit of their natural freedom, the bearing is permanently locked against disassembly even when removed from the car and in stock bins.—George Automatic Roller Bearing Co., 4614 Spring Grove Ave., Cincinnati.

S. K. F.

Both radial and thrust bearings are manufactured for all parts of cars or motor trucks. The feature of the radial ball bearing is that they are double rolled and the outer race is ground on a radius so that any deflection of the shaft does not affect the true running of the balls. The separator is made of a single piece of steel. The thrust bearings are also self-aligning. The balls are carried in the ring separator and either one or both of the races are concave on the outer surface and fit in a convex ring, thus play is provided to compensate for improper alignment. The feature of these bearings is self-alignment. Since all shafts spring under load, it is logical to compensate for this deflection by designing bearings to meet this need. The self alignment is provided by the design of the races, the outer surface of the inner race contains two grooves in which the balls travel. These grooves are ground to a radius slightly larger than the radius of the balls the same as in most ball-bearing designs. The inner surface of the outer race is ground in the form of a section of a hollow steer whose center is the center of the axis of rotation, thus all points on this surface are equally distant from the center of the bearings and the balls are an inner race free to rotate at any angle within the spherical outer race. This construction makes it easy to remove the balls and inner race as it is simply a matter of turning the outer race with respect to them. Another feature is the ust of two rows of balls which are staggered, with the result that there are a large number of balls for a given size bearing.

The inner race must be a tight fit on the shaft and should be prominently seated in a fixed position against the shaft shouldered by a lock nut or a distance piece. A driving fit cannot always be relied upon because continued action of the load may pene down the shaft. The shaft should always be slightly smaller than the bore of the bearing so that there will be no danger of springing it when it is put in place. The fit may be readily made by warming the bearing in oil until about 170 deg. F., and driving it into position by light blows with a soft metal hammer. Under no circumstances must the force be applied to the outer race. Usually a very slight clearance, a sucking fit, is used in mounting the outer race. Usually this clearance is from zero to .0008. In case split housings are used to carry the bearing, great care must be exercised to see that the housing sections do not bind the outer race.—S. K. F. Ball Bearing Co., Hartford, Conn.

Rockwell-Drake

This bearing is a standard single row, annular type and is made in all standard sizes. The races are made from solid bars of chrome alloy steel and are scientifically heat treated. The balls are also made from chrome alloy steel and are hardened and ground. All parts are carefully inspected after each operation and checked by the Johannson gages which are the acme of accuracy. All bearings are within the S. A. E. limits on dimensions.—Rockwell-Drake Corp., Hartford, Conn.

American

Ball thrust bearings only are made and these are especially adapted to steering knuckles, clutch collars, differential gear and pinion. The bearing consists of three rings the center one carrying the balls and being made of bronze. The other two rings are hardened crucible steel and are ungrooved. They are made in all sizes and for light, medium and heavy service.—American Ball Bearing Co., Cleveland.

Fafnir

The full line of bearings includes single and two-row radial ball, cone, magneto type, thrust, self-aligning thrust, self-aligning single and two-row radial, ball bearing line shafting hangers, the last being of special interest to repairmen. Nearly all bearings are made in light medium and heavy styles.

The annular types are two-point design with flexible cages. High carbon chrom steel is used, and the hardening process consists of special heat treatment with oil quenching.—Fafnir Bearing Co., New Britain, Conn.

Wright

Taper roller bearings are manufactured in all standard sizes. The taper rollers are retained by two steel rings but are not separated, each roller being connected to the ring by the features claimed for the bearing are practical elimination of friction, perfect adjustability, minimum parts, and maximum efficiency. The design allows the use of a full series of rolls and consequently a gain in load carrying capacity of 50 per cent is claimed. Further capacity is obtained by the absence of ribs, flanges or supplementary guides so that the full length of the roller may be used for carrying the load.—Wright Roller Bearing Co., 1420 Chestnut St., Philadelphia.

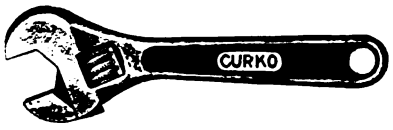
Graham

Cup and cone bearings in all standard sizes are manufactured and also ball and roller thrust bearings.—Graham Roller Bearing Co., Coudersport, Pa.

Norma

Four types are made: Annular, roller, thrust, and combination. The annular bearing is intended for high-speed work. The inner race is ground to the arc of a circle with radius slightly greater than that of the ball. The outer race has the same radius but one shoulder is ground away, thus the outer race may be removed without disturbing the balls. Since there is nothing in the structure of the bearing itself to hold the three component parts in their correct lateral relation, except in one direction, the bearing must be rigidly mounted so as to

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Curko

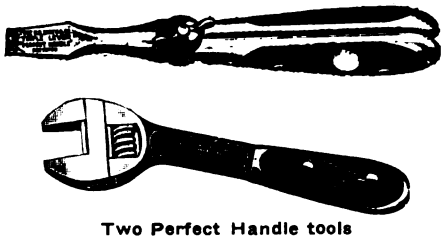
prevent lateral displacement from the open side. An exterior view of the roller bearing is much like that of a ball bearing, there are the inner and outer races and the roller cage. The rollers are cylindrical and the inner race is flat and the outer one is convex so that the greatest load comes on the center of the roller. The roller is mounted on a spindle which is carried in the roller cages. Ball thrust bearings are made in a single type for thrust in one direction and in double type where thrust in two directions must be taken care of. The advantages of the double housed type is that each unit is self-contained and self-adjusted. Combination bearings are made with ball thrusts and roller or ball radial bearings. The bearings are made in standard sizes.—Norma Co., of America, 1790 Broadway, N. Y.

Hess-Bright

Annular ball bearings, both single and double row, and thrust bearings, in all styles, are manufactured. Balls are separated by bronze cages and in the annular type, the balls are removed or replaced by removing the separators and placing the two races eccentric to one another. The races are of special alloy steel possessing both extreme hardness and toughness. After grinding, both balls and races are polished to a mirrorlike smoothness.—Hess-Bright Mfg. Co., Philadelphia.

New Departure

Thirty to 50 per cent greater carrying capacity has been obtained in the single row bearing by the adoption of a new separator which allows more balls to be carried, and because the balls are of increased size. The separator is made of two steel rings held in place by a cross member between each pair of balls. A further improvement is in the curvature of the inner and outer raceways so that slippage of the balls is minimized. This is a strictly radial bearing and is not designed for more than 10 to 20 per cent thrust load. The double row bearing is so designed that loads from any direction may be sustained. It will sustain a thrust load equal to twice its radial load capacity when there is no radial load. The double function of this bearing makes it the most desirable to use in almost every case. The Radax is of the cup and cone type with an angular contact of 35 deg. from the normal. The cone, separator and balls may readily be withdrawn. When a bearing of this type is employed for radial load work a second bearing should be inversely mounted

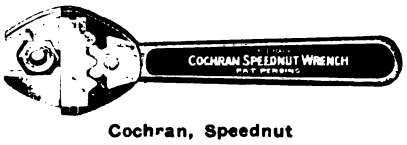


Two Perfect Handle tools

to absorb the internal axial forces. The angularity of contact between balls and races is such as to equalize the radial load between the bearings. Such a mounting gives the effect of one double row bearing except that the space between the two rows may be fixed by design.—New Departure Mfg. Co., Bristol, Conn.

Gurney

Annular bearings are made in which the inner and outer races are of standard design but the cage for the balls is a heavy steel ring fitting closely around the inner race, and covering about half the surface of the balls. The distinguishing features claimed for these ball bearings are a full complement of balls with uninterrupted race ways with full depth to take care of the thrust, accuracy of



Cochran, Speednut

race contour; concentricity; a simple one-piece separator which allows the maximum number of maximum sized balls to be used. The contour of the races is very close to that of the balls so that instead of point contact the actual surfaces touching is relatively large, yet not sufficient to appreciably impair the frictionless qualities of the bearing. Radio-thrust bearings are similar in design except the shoulder of the side of the race which takes the thrust is deeper.—Gurney Ball Bearing Co., Jamestown, N. Y.

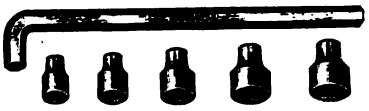
Wrenches

Ray Socket Wrenches

Socket wrench sets include a No. 6 set, which is packed in a canvas case and has a folding ratchet handle, double-blade screwdriver bit, extension bar and 6 pressed steel sockets. Price with twin handle, $3.50; ratchet handle, $5. A similar set at the same prices is packed in a fiber case. Set No. 11 is furnished in a wooden box, and consists of a nickeled



The Becco Set



Curko Socket

reversible ratchet handle, double blade screwdriver bit, short and long extension bars, I universal joint, spark-plug socket and ten pressed steel sockets. A special Ford set includes oval socket for Ford main bearing bolts, reversible ratchet handle, double-blade screwdriver bit, 2 extension bars, universal joint, spark-plug socket and 10 other sockets. Price $7.50. Set No. 39 includes folding, ratchet handle, 8-in. pipe wrench, pliers, 5 double-ended S wrenches, a cotter-pin extractor, folding screwdriver, universal joint, 2 extension bars, offset socket wrench handle, spark-plug socket and 39 steel sockets. Price $15.—Packer Auto Specialty Co., 90 West St., New York.

Perfect Handle

The feature of these tools is the combination wood and steel handle to give a better grip. This handle is supplied on all sorts of tools including a pipe wrench, hammer, tack puller, hatchet, valve spring lifter, adjustable S wrench, plain and special screwdrivers. In addition, pliers and pincers are manufactured.—H. D. Smith & Co., Plantsville, Conn.

Whitehouse

Special wrenches are made for Fords only. There is a single-end wrench of the socket type with an L handle and a triple wrench with a tee handle, there being a socket in each of the three points. Price 40 and 50 cents respectively. A single-end wrench for reverse and brake-band adjustments, sells for 15 cents and a double-end wrench for reverse brake and cylinder-head nuts sells for 25 cents.—Whitehouse-Le Compte Mfg. Co., Newark, N. J.

Keystone

Socket wrenches and adjustable S wrenches are made. There is a reversible square sleeve ratchet with handles ranging from 10 to 28 in. and corresponding prices being $5 to $8.25. There are many other ratchets to suit various purposes. There is an adjustable S wrench with handles 6 to 14 in., and prices 60 cents to $1.75. A similar wrench with teeth on one of the jaws so that it may be used as a pipe wrench sells for the same prices.—Keystone Mfg. Co., Buffalo, N. Y.

Harris & Reed

Double-ended steel wrenches for square and hexagonal nuts are made in all sizes and are furnished singly or in kits of five or more. Single and double-ended alligator wrenches are manufactured.—Harris & Reed Mfg. Co., Chicago.

Hjorth

An adjustable, open-end nut wrench, 4 and 6-in. sizes, sell for 80 cents; the 8-in., $1; 10-in., $1.25; 12-in., $1.60.—William Hjorth & Co., Jamestown, N. Y.

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Walden-Worcester

All styles of wrenches for automobile work are manufactured. There are combination socket wrench sets for the Ford and other cars, the Ford set costing $4, and there are other sets ranging up to $11. Tee and offset wrenches, brace socket wrenches and double socket Tee handle wrenches are made. Speed wrenches resemble the brace socket type, except that they are longer. L socket wrenches are also designed particularly for the repairshop. Double offset wrenches are also for this purpose. A complete set of special wrenches for Ford, Overland and Buick cars is made and these are mounted on a display board, which will be furnished dealers. The No. 12 combination wrench set is designed for the garage and repairman. It contains a ratchet wrench with 9-in. handle, 3 extension bars, 1 universal joint, 1 Tee and offset wrench, 27 hex sockets, 11 square sockets, 1 spark-plug socket, 5 open-end wrenches and 1 brace socket wrench. Price $12.—Walden-Worcester, Inc., Worcester, Mass.

Bay State Auto Kit

The No. 1 style contains about 2 dozen socket wrenches, extension shanks, universal joint, ratchet handle, and will fit the nuts on practically all cars. Price, $10. A less comprehensive outfit sells for $7.50.—George A. Cutter, Taunton, Mass.

Greenfield

The bit-brace nut wrench will take both square and hexagon nuts and is designed for carriage and automobile work, and should be useful in removing or replacing bodies particularly. Set of 9 wrenches, $1.80; single wrench, 20 cents. —Greenfield Tap & Die Corp., Greenfield, Mass.

Bonney

All kinds of wrenches are manufactured, these include engineers' wrenches, both single and double end, Bonney thin wrenches, adjustable S nut wrench, adjustable S pipe wrench, combination pipe and nut monkey wrench, combination pipe, nut wrench and pipe cutter, monkey wrenches, Vixen wrenches.—Bonney Vise & Tool Works, Allentown, Pa.

Cochran

The Cochran Speednut wrench is an end wrench which is instantly adjustable to any nut. The harder the pull, the tighter it grips. A pipe wrench is also manufactured. It is made entirely of steel, it gives a good grip and releases readily. It is said that it cannot be injured by side pull owing to its solid construction. Price, $2, for 6 to 8-in. size; $2.25 for 10-in.; 14-in. $3.—Cochran Pipe Wrench Mfg. Co., 7800 Woodlawn Ave., Chicago.

D. & H. Combination

This is a patent wrench which is a cross between a monkey wrench and a pliers, and may be used for a variety of purposes. It is said to take the place of a monkey, pipe, socket and ratchet wrench and may instantly be adjusted to be used as a pliers.—D. & H. Mfg. Co., 61 Foote St., New Haven, Conn.

Shaw

This is a one-piece automatically adjustable wrench consisting of a V-shape jaw with teeth on one side and smooth on the other, placed at right angles to a long handle, which is split down the middle from the base of the V jaw. The slit allows sufficient give so that round stock is firmly grasped, and may be turned readily. Sizes run from 4 to 15 in. and prices $6 to $25.—Shaw Propellor Co., 15 Elkin St., Boston.

Unique

Ratchet and socket wrenches are made for Ford cars. The ratchet set consists of ten pieces; ratchet handle 7 in. long; two screwdriver blades, extension bar; six socket wrenches to fit all nuts and bolt heads on Ford cars, including cylinder heads. Price, in heavy leather case, $2.50.—Will B. Lane, 180 N. Dearborn St., Chicago.

W & B

An extensive line of wrenches is made, including engineer's wrenches, single or double headed, hexagon cap screw wrenches, double headed, with 15-in. angle; double head S wrenches with 22½ deg. angle; Bull Dog wrenches, spark-plug wrenches and monkey wrenches of various sorts.—Whitman & Barnes Mfg. Co., Akron, O.

Wakefield

A variety of adjustable wrenches is manufactured including flat monkey wrenches in various sizes and many styles of bicycle wrench.—Clarence E. Wakefield, Worcester, Mass.

Crescent

A drop-forge adjustable jaw wrench with the handle 22½ deg. offset is designed especially for repair work. It is made in various sizes. The universal pliers has a curved lower jaw which will force any object against the upper jaw for its entire length or breadth, regardless of the shape or size of the piece, provided, of course, that the surface against the upper jaw is flat. An adjustable pliers is made with two jaw settings. It is made in 6, 8 and 10 in. Moving picture slides, advertising various features of these tools and with a space for the dealer to insert his own name are furnished free of charge.—Crescent Tool Co., Jamestown, N. Y.

Williams

Drop-forged wrenches of all kinds are manufactured, and are supplied to the dealer either singly or in sets, each set being carried in a cloth bag with a separate compartment for each wrench. Special sets are made for Fords. There is a spark-plug wrench and the Vulcan autotool, which is 12 tools in 1, being a hammer, tire lug wrench, cotter-pin puller, gas-tank wrench, wire-insulation scraper, air-tank wrench, spark-plug wrench, alligator wrench, cotter-pin spreader, screwdriver and bottle opener. Length 8½ in. Price $12 per doz. J. H. Williams & Co., Brooklyn.

Curko

Socket wrenches and an adjustable end wrench are made. There are five sockets ranging from 5/16 to 7/16. Price, $1. The end wrench is made in four sizes, 4, 6, 8 and 10 in., and sells for 65, 80 and $1.—Currier-Koeth Mfg. Co., Coudersport, Pa. G. L. Holmes & Co., selling agent.

Crescent

Adjustable wrenches are made in several sizes. The handle is drop forged from the best carbon steel, hardened all over, and there is a hole in the end so that it may be hung conveniently. There is a small spring washer on the thumb screw to hold the adjustment.—Crescent Tool Co., Jamestown, N. Y.

Marvel

This is an adjustable socket wrench provided with two types of handles to suit different kinds of work. It grips the nut firmly. Price, $4.—Marvel Accessories Mfg. Co., Cleveland.

Becco

The Becco wrench set provides eight different openings for small bolts and nuts, there being four double ended tools and the smallest has a screwdriver on one end. They are provided with a small clamp, so that the four may be packed together when not being used. The dimensions of the various openings are 5/16, 11/32, ⅜, ½, 17/32, ⅝, 11/16, and an alligator jaw which will take anything up to ¾. Set No. 1 is made of ⅛-in. steel, nickel plated, and No. 2, 5/32, finished in black enamel. Price 65 cents.—Michigan Motor Specialties Co., Detroit.

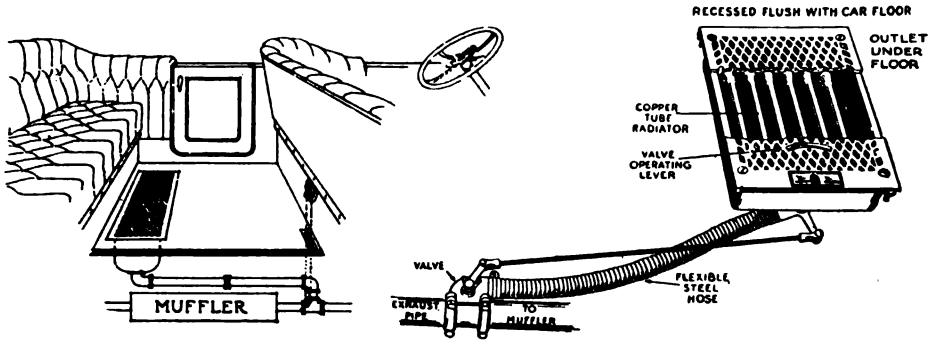
Mossberg

There are a few styles of nut wrenches that are not represented in this line. A specialty is made of motor wrenches. The Auto-cle is put up in sets consisting of a number of sockets, handle with ratchet, universal joint and extension bar. No. 1, the large set, has 31 sockets, taking from 5/16 to 1 9/32 hex. nuts and several sizes of square nuts and cap screws. The ratchet is reversible and there are two extensions. No. 2 set is much smaller, having 12 sockets taking nuts from 15/32 to 1 3/32 hex., and several square sizes. Reversible ratchet, two screwdriver bits and two extensions complete the list. In case of flexible leather.—Frank Mossberg Co., Attleboro, Mass.

Buffum

A complete line of tools, including all types of wrenches, is produced; 15-deg. engineers' wrenches, adjustable S wrenches, steel monkey wrenches, alligator wrenches with three dies in the handle, valve spring lifters, offset screwdrivers, file and tool handles, cold chisels, bearing scrapers, countersinks and a multitude of other specials.—Buffum Tool Co., Louisiana, Mo.

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Left—The Bailey Heater Installed. Note the method of control. Right—The Perfection Heater, showing the radiating tubes and method of installation

Heaters

J. M.

An exhaust gas foot rest heater which has a water-jacket around the exhaust passage. The heater itself consists of a long cylinder, through the center of which is a pipe for the exhaust gases, and surrounding which is a large water-jacket. The exhaust from the engine is diverted through the engine and the amount of heat may be controlled by opening or closing a valve on the exhaust line.—J. M. Shock Absorber Co., 210 S. 17th St., Philadelphia.

Ottofy

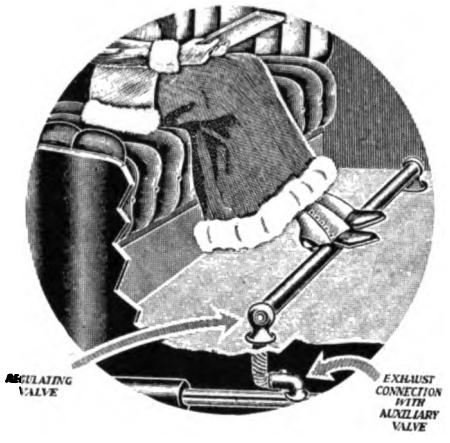
A jacket is placed around the exhaust pipe and cold air entering from the front due to the motion of the car is driven back and delivered to both drivers and tonneau's compartments. Price, roadster, $10; touring car, $15; for Fords, roadster, $5; touring car, $7.50.—Ottofy Auto Heater Co., 3133 Locust St., St. Louis.

Bailey

The device consists of a register which is placed in the floor of the car and in which is a coil of pipe through which the exhaust gases pass. A flexible pipe is used to connect with the exhaust pipe. Price $15.—Riverside Machine Works, Newcastle, Pa.

Brickey

An exhaust heater for Fords which consists of a jacket which encloses the exhaust pipe and carries the warm air to registers in the floor of the front and rear compartments. Price $3.90 for the front



The K. P. Footrest Heater

heater and $4.90 for the rear one.—Thurston Auto Supply & Mfg. Co., 3020 Michigan Ave., Chicago.

Utility

A heater 28½ in. over all is furnished with 5 ft. of flexible tubing and exhaust fittings to fit any make of car and for Fords there is a smaller model 19½ in. long with 3 ft. of flexible tubing. The large heater has been improved by adding a protective metal shield to prevent scorching of shoes, etc. The method of installation is bore a 1 in. hole in the exhaust pipe just ahead of the muffler and to drill two 1¼ in. holes in the floor boards where the old foot rest was. Installation can be accomplished from 20 min. to ¾ of an hour. The heater is left in place all year round. Price $15 and $7.50 for the Ford size.—Hill Pump Valve Co., Chicago.

Perfection

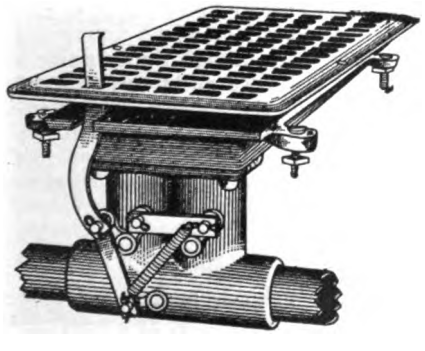
There are many styles of exhaust heaters to meet different needs. There is a register type suitable for placing in the floor of the tonneau, a foot rail type and special designs for buses, florists' cars, ambulances, etc. Type A is a register design 8½ x 12⅝ and has a polished aluminum cover. Price $25. Type AB is identical except that the heat control is a separate unit so that the chauffeur, for example may turn the heat on or off. Price $25. Type B is for commercial cars and the heating tubes are protected by a perforated metal housing. The heat control may be controlled wherever desired. It may also be used for buses up to 10 passengers capacity. Price $20. Type C is similar to B, only smaller. It may be used where the area to be heated is small and space for installation is limited, as in a coupe. Price $15. Type D is a foot rest which may be used on pleasure or commercial cars. A separate heat control is furnished. Price $20 to $25. A special heel board heater for Fords sells for $15.—Perfection-Spring Service Co., Cleveland.

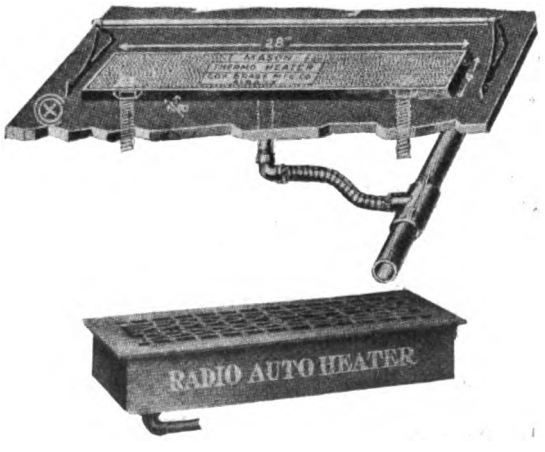
Dayton

An exhaust heater 24 x 4¼ square. It is made of pressed steel. All seams and joints are welded. The heater is a double box arrangement with the inner one divided into three partitions, lengthwise, so that the heat travels three times the length of the heater, or six feet. There is a ¾-in. air space between this box and the outer one, and the inside of the outer box is lined with ¼-in. asbestos paper.—Dayton Welding Co., Dayton, O.

Mason Thermo

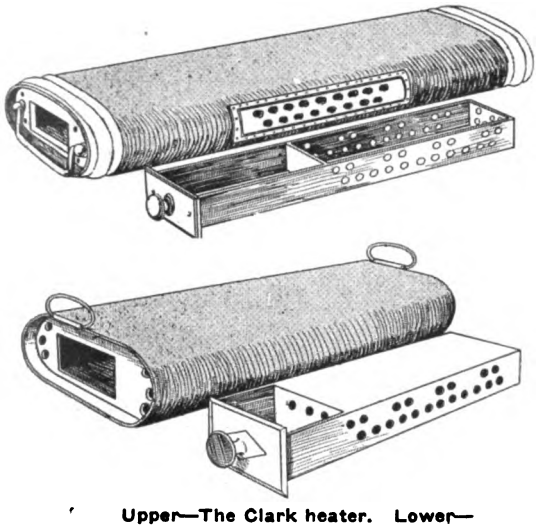
An exhaust heater which is unusual in that it has a thermostat to regulate the temperature. The heater is 28 in. long





Left—The Mac exhaust heater is a register type, setting flush with the floorboards
Right—Upper—The Mason Thermo heater is thermostatically controlled, and readily installed
Right—Lower—The Radio heater is sheet metal, and light in weight

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Upper—The Clark heater. Lower—The Lehman heater. Both of these heaters burn a special fuel

by 4 in. wide and fits on the floor of the car. It may be installed in 20 min. as it is simply necessary to cut a V-shape hacksaw hole in the muffler between the engine and clamp a brass casting over it, bore three holes in the floor of the car opposite the openings in the bottom of the heater and connect the piping. The heater sets on the floor of the car and not in it. Cast iron black enamel, $10; all bronze, heavily nickel plated, $15. —Cox Brass Mfg. Co., Albany, N. Y.

K. P. Footrest Heater

A foot rest type of heater connected to the exhaust pipe. It is made in three styles, model A, $25 is all brass and highly finished in nickel, comes in any length up to 40 in. It is swivelled the same as the ordinary foot rest. Model B made from the same pattern as A but with malleable iron brackets and steel foot rail. Price $7.50. Model C is without the swivelled feature and sells for $12.50. All models are applicable to all makes of cars and are readiy attached. The heat may be regulated and it requires about 4 min. after the heat is turned on, for the heater to become warm.—K. P. Mfg. Co., 250 W. 54th St., New York.

Bridgeford

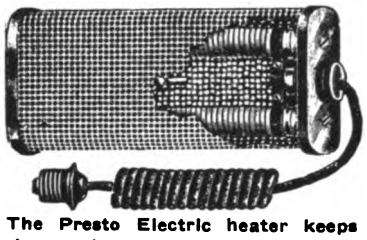
A thin wedge shaped foot rest exhaust heater which may be used for either front or rear compartments of the Ford. It is made of steel with an asbestos bottom and is screwed to the floor board. Price $3.50.—Home Light Co., 3353 Milwaukee Ave., Chicago.

Lehman

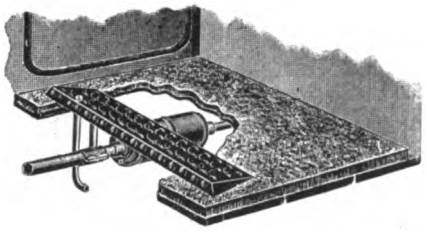
These heaters are made in a variety of styles and sizes but burn a special coal in every case. This coal is put up in the form of bricks and gives off no flame, gas, odor or smoke. The coal is carried in a special drawer and the fire is started by heating the brick in a coal fire. The heaters are usually covered with attractive covered carpet and the ends are finished in brass. A popular model is a self-ventilating design 14 in. long and oval shaped, weighs 7 lbs. and sells for $1.75.—Lehman Bros., 10 Bond St., New York.

Clark

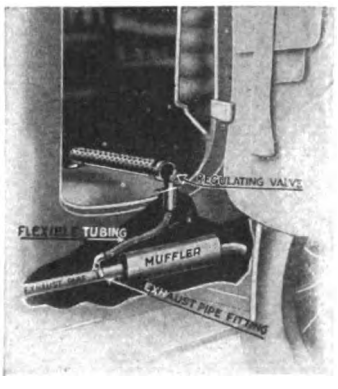
A variety of heaters are made for use with carbon brick coal. The heaters are usually covered with Brussels carpet and the coal which will burn for several hours, is inserted in a drawer at one side. They



The Presto Electric heater keeps the engine warm while in the garage



The Bridgeford car heater may be installed in either compartment of the Ford



The Utility is a foot-rest type heater, and may be fitted to any car

are asbestos lined and made of bronze steel. Price $1.50 up.—Chicago Flexible Shaft Co., Chicago.

Presto

An electric carbureter, engine and radiator heater for unheated garages which is supplied from regular 110 volt lighting circuit and which is designed to be placed under the hood. The heater consists of a resistance coil mounted in a suitable perforated metal case and with twin heating elements extending the full length of 6½ in. The construction throughout is fireproof and practically indestructible. 10 ft. of asbestos covered lamp cord is furnished with each heater together with regular screw plug for lighting circuit. Price $3.50.—Metal Specialties Mfg. Co., 730 W. Monroe St., Chicago.

Radio

This exhaust heater is improved for 1917 by constructing it of sheet steel instead of cast iron which reduces the weight and increases the heating efficiency 25 per cent. The heater is 14½ x 5 x 3 in. deep and heater is controlled by a lever at one side. Price $8.—Milwaukee Auto Specialty Co., Milwaukee.

Dunco

An exhaust heater which is designed to be set in the floor. It is connected to the exhaust pipe by flexible metal hose. Forward motion throws the force of heated up through the register. Price $20.—The Dunkirk Corp., Dunkirk, N. Y.

Konsrv

An electric heater designed to keep the engine and radiator warm and prevent freezing when the car is left in a cold garage. It is placed in the hood. The No. 1 design is for attachment to 110-volt lighting socket. The No. 2 is a combination which may be used either on 110-volt or 6-volt battery circuit. The current consumption is 100 watts per hour, and it is said, that 150 per month is the average charge for current. Price No. 1, $5; No. 2, $7.50.—Konsrv Electric Co., Cleveland.

Konsrv

This electric heater is made as a foot rest in three styles and may be turned on or off by simply operating a switch. Current is supplied from the electric system. The heater is designed to give a steady heat but will never get hot enough to burn or scorch. It is made in three sizes, 14, 22 and 34 in. and is finished in polished nickel. Prices are respectively, $5, $6, and $6.50.—Konsrv Electric Co., 2041 E. Third St., Cleveland.

Konsrv

An electric steering wheel heater is made which conforms to the shape of the steering wheel and may be installed without difficulty. The consumption of current is 4 amperes on a 6-volt system. Price $5.—Konsrv Electric Co., 2041 E. Third St., Cleveland.

Pavasco Steering Wheel

These wheels are produced for all makes of cars. The heating wire is molded directly in the condensite rim. Only that portion of the rim on either side which the hand usually grasps is heated. A special commutator is mounted in the hub of the wheel for conveying the current up through the steering post. The heat is turned on by pressing a button in one of the spokes. The Model G sells for $20 and it is an 18 in. wheel. The Model H, in addition, has a tilting feature and sells for $25.—Pouvailsmith Corp., Poughkeepsie, N. Y.

Mac

The Mac exhaust heater is a register type setting flush with the floor and is

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unusual in that it is also furnished with whistle and cut-out if desired. The No. 1 heater has approximately 100 sq. in. of heating surface and there are pedals for operating the whistle and cut-out as well as the heating valves. Price $15. No. 2 is similar except that it is not provided with a cut-out or whistle. Price $10. No. 3 is the same as No. 2 except that it is for the front of the car.—Edward McClintock, 221 South 5th St., Minneapolis.

Tire Holders

Badger

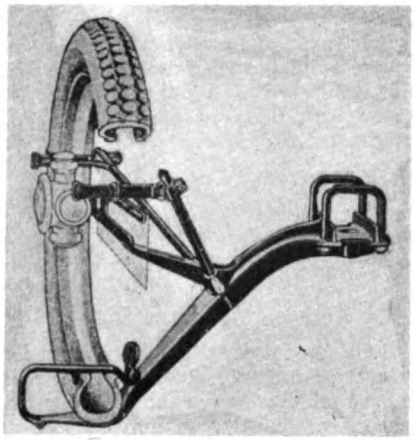
A complete line of tire carriers is manufactured. These include holders for both side and rear. There is a running-board tire holder for Fords carrying one tire and costing $2.15, and with two tires $2.40; for larger cars the prices are $3.50 and $4, the latter being for tires over 4½ in. A rear tire carrier for Fords combined with a bumper consists of two brackets and four straps for holding the tire. Prices $7.50 to $11.50, depending on design of bumper. A similar style for 490 Chevrolet is made for the same prices. A rear tire holder, lamp and license bracket for Fords, for either one or two tires and provided with a padlock, sells for $4. A special for the 490 Chevrolet is $3.75.—Auto Parts Mfg. Co., Milwaukee.

Sly Perfect

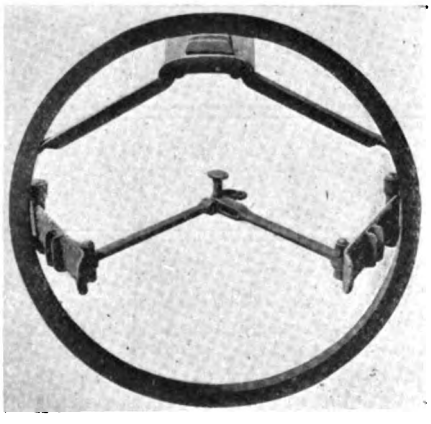
A rear tire holder for Fords and Chevrolet 490, consisting of a split rim which holds the tire in place the same as if it were on a wheel by expanding the rim by means of a turn buckle which may be locked in position. The device also carries the lamp and license bracket. It is designed either for plain tires or tires on demountable rims. Single, $3.50; double, $4.50. Pacific Coast prices, $4 and $5. The Sly Perfect combination lamp and license bracket and tire holder which is of the cradle type and for Fords alone. It is made of pressed steel, black enamel and there is room for two tires in the semi-circular members. A substantial support is afforded the tires and there is no possibility of chafing the tread. A padlock is provided. A similar design is provided for the running board.—Smalley Daniels, Detroit.

Hoover

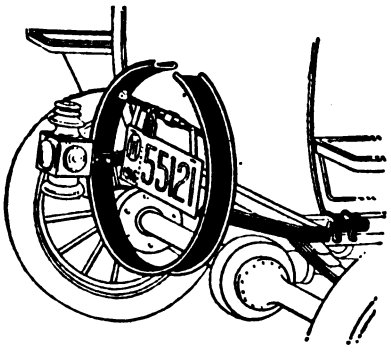
The Hoover tire carrier is made for one, two or three tires and the standard is the two tire size. It supports the tire or rim at three points, at the top and at each side. The two side members being hinged and expanded by a toddle mechanism which may be padlocked thus securely holding the tires in place. There is another style for smaller cars with only a support top and bottom.—Hoover Spring Co., 617 Kirk St., San Francisco.



Badger tire carriers are made in many styles, and are durably constructed throughout



The Hoover tire carrier has an expanding lock, shown above in the contracted position



The Sly Perfect tire carrier is made for the Ford and Chevrolet. It holds the tire in the same manner that it is held on the wheel

Brake Lining

Raybestos

Raybestos is a solid woven asbestos brake lining containing no filler, and is made of 90 to 99 per cent of high-grade long-fiber asbestos yarn, which is thoroughly impregnated with a highly developed heat-and-wear-resisting compound which renders it impervious to heat, oil and weather, and gives long life. Before and after treatment it is rolled and compressed to make it hard and solid as well as to render it one homogeneous piece which will wear down to a fine pasteboard thinness.—The Raybestos Co., Bridgeport, Conn.

Multibestos

In the manufacture of this brake lining pure asbestos rock is crushed into fiber, twisted, and spun into yarn and woven into brake lining. In the spinning process, wires are inserted so as to give added strength and body. After the fabric is woven it is impregnated with a special compound to make it impervious to oil, moisture, dirt and heat and to give it homogeneity and a high coefficient of friction. The prices run from 60 cents to $10.80, and the sizes vary from 1 in. to 6 in. width and ⅛ to 3 in. thickness. Ford size, 1⅛ x 5/32, is 85 cents per foot. Clutch facings are also manufactured.—Standard Woven Fabric Co., Walpole, Mass.

Motobestos and Ajax

Motobestos is a solid woven lining composed of the very best quality of long-fibered asbestos and brass wire, and impregnated. Ajax is an asbestos cloth woven of long-fiber asbestos and brass wire, and is treated with a special oil-proof and waterproof composition and cured under a 20,000 lb. pressure to the square inch and vulcanized in a rubber belt press. The result is a perfectly solid friction facing which wears down evenly to the last 1/16 in. While 6 in. is the maximum standard width, it is possible to obtain brake lining up to 18 in. width and ⅞ in. thickness.—Asbestos and Rubber Works of America, New York.

J-M Non-Burn

This brake lining is made of superior long-fiber asbestos reinforced with interwoven wires in each strand, and impregnated with chemicals to increase its resistance and frictional qualities. It is made in all standard widths and thicknesses. J-M Ford special brake lining is a densely woven tough fabric with good gripping power and durability, impregnated with a compound which makes it highly resistant to oil. In accordance with the Ford Motor Co.'s specification, J-M special Ford brake lining is made without wire.—H. W. Johns-Manville Co., New York.

Thermoid and Braidoid

Thermoid is a hydraulic compressed brake lining, folded and stitched, and Braidoid is a solid woven lining. Thermoid weighs 50 per cent more than the solid woven lining. It is cured under hydraulic pressure, and has exceptional wearing qualities. Canadian asbestos, reinforced with brass wire, and impregnated with a special friction compound, are the materials used. Prices run from 70 cents for the 1 x ¼ lining up, the 6 x ⅝ costing $4.80.—Thermoid Rubber Co., Trenton, N. J.

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Bestbestos

A specialty is made of brake lining for all Overland models and other popular cars, and stock sets are always carried. It manufactures also Fordbestos, Silent-Drive and Chatterproof transmission linings for Fords. In ordering brake lining it is merely necessary to state the make and model of the car, and brake lining will be furnished to the size required. Ford fan belts are made out of a material similar to Fordbestos. Prices run from 32 cents for the 1 x ⅛ in. up.—Federal Asbestos Co., Paterson, N. J.

Garco

This lining is solidly woven, and through it are hundreds of fine brass wires, the whole finally being formed, under heavy pressure, to the exact thickness required; then it is treated in a solution to render it impervious to heat, oil, water or dirt. It is so solidly woven that it may be machined as readily as metal or wood. It is made in thicknesses of ⅛, 5/32, 3/16 and ¼, and in widths from 1 to 4 in. Prices per foot vary from 60 cents up. Special lining is manufactured for Ford transmission bands, and contains no wire. There are three pieces, 23½ in. long, 1⅛ in. wide and 5/32 in. thick., and a supply of rivets in each box.—General Asbestos & Rubber Co., Charleston, S. C.

Autobestos

Ambler autobestos is a solid brake lining woven in one thickness from the purest long-fibered asbestos, thoroughly impregnated and rolled between heavy cylinders until it reaches the desired toughness. It is made in all sizes, from 1 to 6 in., and in widths from ⅛ to ⅜ in. Prices run from 60 cents to $10.80. It is made from long-fiber Canadian asbestos, in which there is a small percentage of long staple cotton, the yarn then being twisted with 2/8 millimeter brass wires. The complete yarn then being woven to size and thickness required.—Keasby & Mattison Co., Ambler, Pa.

Cork Insert

This lining is composed of a high grade of asbestos of standard make into which cork inserts have been set, thus increasing the frictional property and preventing any loss of efficiency due to oil or dirt.—The Cork Insert Co., 164 Federal Street, Boston.

Wearwell

Metallic woven brake lining is sold under the trade name Asbestos, and folded and stitched lining under the name Wearwell. The material used is pure asbestos, impregnated.—Asbestos & Rubber Works of New Jersey, Camden, N. J.

Staybestos

S-M-C brake lining is closely-woven, high-quality asbestos and two-ply friction wire. It is impregnated with special compound and is compressed to exact size by large steel rollers. Prices run from 60 cents for the 1 x ⅛ to $10.80 for the ⅜ x 6.—Staybestos Mfg. Co., Germantown, Philadelphia, Pa.

Scandinavia

It is made of long, staple cotton woven in one solid piece, of uniform thickness, and specially impregnated to make it resistant to oil, water, dust or heat. This treatment also prevents the lining from becoming hard and glossy. The Ford lining is 1⅛ x 5/32, and other linings ¼ and 3/16 in. thick, and up to 6 in. wide.—Scandinavia Belting Co., 108 Reade St., New York.

Embestos

It is made of the highest grade of asbestos cloth interwoven with wire and impregnated with a rubber compound to resist heat and oil. It may also be used for lining clutches. Thicknesses are ⅛, 5/32, 3/16 and ¼, and widths from 1 to 4 in. Price runs from 33 cents per foot minimum to $1.97 per foot maximum. Ford sets, $1.15.—Empire Rubber & Tire Co., Trenton, N. J.

Packing

Longwear

A full line of packing material is made. Asbestos, metallic, sheet packing Style 110 is made from long fiber, each thread being spun around one or two strands of wire, after which the thread is woven into a fabric and treated with a special compound. This packing is designed for high pressure. Style No. 120 is for joints on cylinder heads and is similar to No. 110. Valve stem packing may be used for packing pump glands and comes in spools with thread diameters from 1/16 in. up. Spark plug yarn and gaskets cut to shape are manufactured.—Asbestos and Rubber Works of New Jersey, Camden, N. J.

Tenax

This is a sheet packing designed to withstand pressure, heat, water, oil, acids, alkalies. It will stand a temperature of 1600 Fah. and a pressure of 6,000 lbs. It is made of tough, compressed asbestos fiber sheeting. For repairs the thickness usually required are 1/32 and 1/16. Price 85 cents per lb. It is made in sheets 50 x 50 in.—Advance Packing & Supply Co., Chicago.

Vellumoid

This is a sheet packing having as its basis, a very strong vegetable fiber which is chemically treated to make it oil, water, gasoline, and grease proof and exceedingly tough and it is a suitable gasket material for use on all oils, grease, water or gasoline connections and in fact, any place where the heat is less than 300 deg. Fah. It contains no rubber or rubber substitute and no mineral matter. It is made in thicknesses from .006 in. up to ⅛ in. and sells at 35 cents to $1.10 per yard.—Fiber Finishing Co., 27 State St., Boston.

Ambler Autobestos

Asbestos sheet packing made of asbestos metallic cloth and treated on one side with graphite and on the other with a red friction compound to give the desired sticking qualities is made in a variety of thicknesses ranging from 1/32 to ¼. The yarn used in this packing is twisted with brass wires and then the yarn is rubberized. This packing will resist the action of heat, water, oil and pressure.—Keasy & Mattison Co., Ambler, Pa.

Luxoid

An asbestos sheet packing reinforced with brass wire, graphited on one side and painted with a red heat resisting cement on the other, it is usually made 1/32 in. thick but also may be had 1/16 in. thick.—Thermoid Rubber Co., Trenton, N. J.

J-M Mobilene

A closely woven asbestos fabric with interwoven brass wires and impregnated with a compound to withstand the high temperatures. It has a red compound on one side to stick the packing to the flange when the joint is broken and graphite on the other to allow the joint to be easily taken apart. It is furnished in rolls 40 in. wide, 250 lb. each, 1/32 and 1/16 in. thick. Price $1.50 per lb. J-M Seigelite packing is a fibrous packing said to become tougher when it is subjected to the action of oil, grease, gasoline and water and is desirable for gaskets to resist the action of these liquids. It comes in rolls 48 in. wide and 50 yards long. J-M Mogul Coil is made of long, fibered asbestos yarn, twisted or braided in round or square sections and thoroughly lubricated.—H. W. Johns-Manville Co., Madison Ave. & 41st St., New York.

Endura

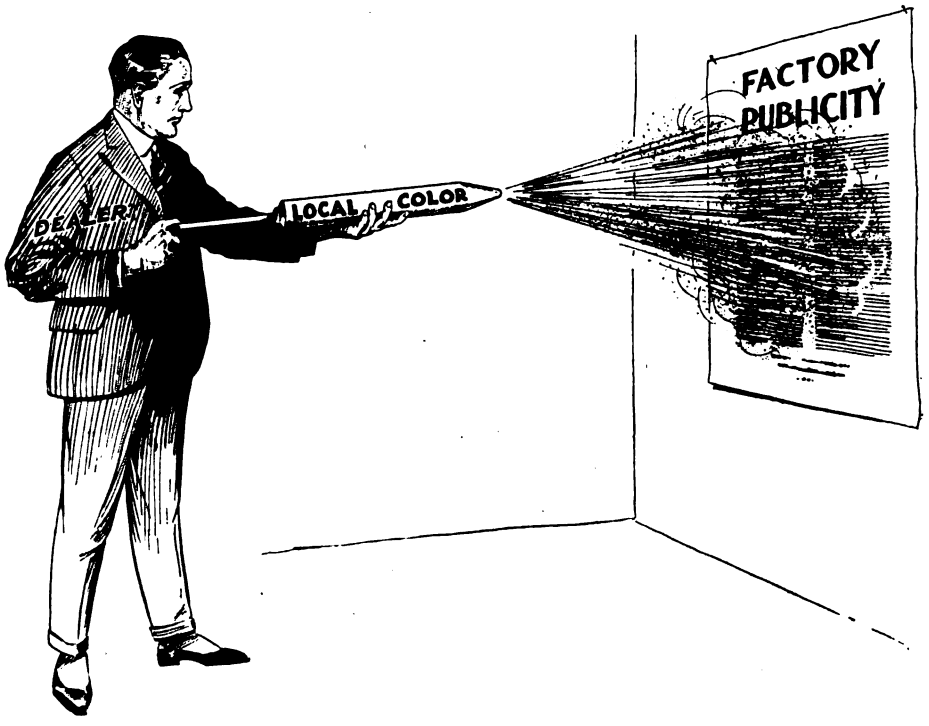
A composition vegetable fiber packing treated to resist oil. It contains neither rubber nor asbestos, it cuts readily but is tough. It comes in rolls 41 in. wide and 1/64 or 1/32 thick, and in sheets 41 in. sq., 1/16 and 1/18 thick. It may be used for carbureter connections, gearbox and rear axle joints, cranking-case gaskets, water pump gaskets and in fact, everywhere except where the temperature is very high.—Endura Mfg. Co., Philadelphia.

A NUMBER OF ADDITIONAL PAGES OF ACCESSORIES

Will be found on page 49 and following

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Putting *Your* City Into Publicity



By Ray W. Sherman

"WELL, Tommy," said Reilly, "I see it's finally happened."

"What?"

"Oh," drawled Reilly, "the flood of motor car publicity from the factories has become so enormous that Uncle Sam has cast his eagle eye upon it and proposes to have a word or two to say as to what is automobile news and what isn't. He says advertising is advertising and news is news, and he doesn't propose that newspapers are to fill their supposedly news columns with a lot of bull that the newspapers in their own hearts admit is plain unpaid-for advertising."

"Oh, ho! So that's it. That'll hit some of us rather hard, won't it?" Tommy Trumbull, who was Cornelius J. Reilly's junior salesman, looked up from the letter he was reading.

What Shall We Do?

"Yes, it will hit some of us rather hard."

"What are we going to do about it?"

"What we should have done in the first place, I suppose. This wild epidemic of unadulterated bull never should have been let to run away with the industry as it has. It hasn't done any particular good and has gotten us all into bad habits.

"You see, when cars were first made to run two blocks without stopping it was wonderful news. Transportation had been revolutionized. And the newspapers went wild about it—as did everyone else.

"Then the car began to develop, and as it got so it could run an extra block it was another big story; and so it went. The car has been in the newspapers since the day it was born. There are two reasons, primarily. One is that the development of the car has been news; the other, seemingly similar to the first, is that everybody wants information about cars.

"That accounts for the beginning of automobile news in the newspapers. And then the manufacturers realized that the newspapers wanted news, and the car makers began to send it out. In the early days it really was news. In the beginning anything a manufacturer said was news. Of course, the newspapers favored the manufacturers that advertised and the manufacturers got into the habit of expecting that the papers they patronized would use more of the news hand-outs.

Everybody's Doing It!

"Then everybody in the industry got the publicity craze, and from that came the advertising-free-publicity, fifty-fifty proposition, with the manufacturers holding the hyphen, which is the money. The factories established publicity bureaus and the mill began to grind. Reams of publicity flowed through the mails. Much of it went to newspapers in which manufacturers did not advertise, and tons of it went into waste baskets.

"But an unfortunate situation developed. The manufacturers did not all know how to write good publicity. They sent it labeled news; but it was NOT news. There was no news value in it, and the newspapers which used it knew there was no news to it; but many printed it because it influenced an advertising contract. It all resulted in an enormous and appalling epidemic of bull—just plain bull.

"Lots of this publicity contained news, but the news was hidden in a wilderness of words. Many publicity and advertising men knew better than to send this out; but less competent men of authority dictated what was news and what wasn't, and the result was that much of it wasn't. To-day there are miles of publicity being sent out that help boost the factory overhead and don't benefit anybody except the paper mills. Some of these publicity seekers ought to get wise and count the cost.

Uncle Sam Not Unreasonable

"But here's the way I dope it out: I don't believe Uncle Sam is going to put his foot down on news. And anything that is news is news, regardless of whether it concerns an advertiser or not. As a matter of fact, there are countless real news stories hidden in the mazes of our industries. Some newspapers are even featuring industrial news, especially concerning local industries. It is a know-your-own-town educational idea. And the same idea applies in a national way.

"Now, the dealer's problem, as I see it, is to help supply the papers of his town with news about himself and the factory he represents—if there is any news; and there is a great deal of news, despite the fact that the factories hide it in labyrinths of words that mean nothing. If we can get hold of this publicity that the factory sends out and make news out of it we shall benefit.

"This applies especially during the show season. The mere fact that Jim, the sales manager, says so and so may or may not be news, but if Jim comes to our show the interview has a far greater news value; and if we see to it that the hotel man or the automobile man on the papers gets this interview at the time Jim is here it is legitimate news, provided the interview isn't of the type that never could be news.

How to Do It

"And if the factory sends through a story to the effect that inclosed cars with convertible bodies are going to be the coming thing it is, to a slight degree,

(*Continued on page* 66.)

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Show Managers Meet During the New York Show



THESE ARE THE SHOW MANAGERS who met during the New York show and who propose a much larger conference next year: 1—G. Gordon McGarry, former Toronto manager. No show in Toronto since the war began. 2—Frank S. Mickley, South Bethlehem, Pa., publicity manager. 3—B. B. Steiber, Bridgeport, Conn. 4—R. W. Schreiner, Lancaster, Pa. 5—Claude E. Holgate, Newark, N. J. 6—Ray W. Sherman, Motor World, New York. 7—Harry T. Gardner, Syracuse, N. Y. 8—E. V. Stratton, Albany, N. Y. 9—Howard B. Chandler, Portland, Me.

SEVERAL managers of dealer shows sat down at luncheon last week in New York City.

It was one of the most important steps taken in the trade in years.

True, there were but seven or eight managers there, for the meeting was called on short notice, but the few that were there found that the management of motor car shows is in great need of a

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Come to Chicago, Mr. Show Manager

There is to be another meeting of managers during the Chicago show. It will be
Tuesday noon, Jan. 25
At 12 o'clock sharp.

Notify Motor World, 239 West 39th Street, New York, whether you will come so the luncheon may be arranged. The name of the hotel will be announced as soon as arrangements are completed. Write now.

Every show manager in the United States and Canada is invited to this luncheon at no expense to himself.

conference on methods and procedure. Hardly had three of the managers been together three minutes when they began to talk about the problems of show management and it resolved itself into this:

Managers' and dealers' associations have struggled with the show problem for years.

Each city has had to work out its own salvation.

The plans that have been developed are none of them perfect. All can stand improvement.

Each manager can tell every other manager something and each manager is anxious and glad to learn from all the rest.

The hour and a half that the managers were together more than repaid some associations for the expense of sending the manager to New York for the meeting. Here is one concrete illustration:

The question of tickets came up. One manager told how a certain specialty manufacturer tried to sell him a ticket device and arrangement. The manager said he turned it down because it cost money and he had found something cheaper and better. This was valuable news for every other man present. It meant a money saving.

Here is another illustration:

One manager wanted to know how to get the show across by means of newspaper publicity. Immediately Harry Gardner, of Syracuse, told how and why the newspapers help make the Syracuse show a success every year. This information, if applied, will mean money to every other dealers' association, because it will help swell the gate receipts at the show and bring in enormous crowds.

Those are but two illustrations. There are others, and had the meeting been longer there would have been more. The meeting was cut somewhat short because the managers had received but short notice of the meeting and had many other things to do. However, many things were suggested. Here are a few:

1. Dates. Many dealer shows are not arranged with any relation to other shows. If circuits were worked out it would act for the benefit of the shows, the dealers and the manufacturers.

2. Tickets. The arrangements for dealers' tickets are seldom the same at any two shows.

3—Decorations. Decorators are said to be holding the shows up for more money this year.

4—Posters. Each show has to get a design for its own poster and have a quantity printed. A conference could select one design, and have enough printed to supply 100 shows or more.

5—Police admissions. This subject came up and was keenly discussed with no definite recommendations.

6—Publicity. There are various ways of getting newspapers to support a show. This support is of great value to the show, and the managers at the meeting all told their experiences.

7—Entertainment. Much could be done toward routing a group of professional entertainers over a whole show circuit, provided the shows were properly dated and the managers were in harmony.

8—Fakers. Each year sees a flock of illegitimate trade paper representatives doing the shows and the public. One trouble has been that the faker who gets "in bad" at one show can repeat at the next show because there is no method whereby the manager of the next show can know about it.

9—Free admissions. This matter is handled in a great many ways. Some shows give none and others give a lot.

10—Association. It was the opinion of those present that a formal association of show managers is not needed, for the present at least. A conference at least once and maybe twice a year is, however, conceded to be practically a necessity. It is proposed to have big conferences at next season's New York and Chicago shows.

Inasmuch as the gathering was so small it was decided to do nothing definite, but to sound out sentiment among all show managers as to meetings next year and get as definite a line as possible on the situation. For this purpose a committee was named, consisting of Harry T. Gardner, Syracuse, a manager but not a dealer; E. V. Stratton, Albany, a dealer and show manager, and Ray W. Sherman, of Motor World.

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Accounting and Business System

Starting Anew

System Editor: Will you kindly help me out with information incidental to installing your system in a new company. The individual owns the building and real estate. Is it correct to Debit cash received, Credit capital and then Debit real estate with the actual amount paid, Crediting cash paid out?

Also, in sub-letting, what part of the business receives the Credit for the rent when the building is owned by the company?

If the building is mortgaged is it correct to credit mortgages payable, debiting what?

Undoubtedly all the expenses incidental to the opening up of a business are charged to general expense.—K. G. McARDLE, Pattinson Mfg. Co., 41 White Place, Brookline, Mass.

In your first paragraph, we will assume that the individual who owns the building also owns the company for which you are going to account. In this connection, we wish to call your attention to the fact that no cash should be entered in the Cash Received column unless it has been actually received and, vice versa, no cash should be entered in the Paid Out column unless it has actually been disbursed.

The correct entry would be to Debit your Asset Account under All Other Accounts, which we will call Real Estate and the Building. This debit would be for the actual amount that was paid for the building and your credit would be to the Capital Account on the Credit side for a like amount, and your explanation of this entry would be "Cost of Buildings and Real Estate Transferred to the company as per Debit Account and credited to the Capital Account of Mr. Blank."

Entering the Mortgage

Now, we will assume that the building and real estate are valued at $10,000, upon which there is a mortgage, we will say, of $5,000. Your next entry will be to credit an amount which we will call Real Estate and Building Mortgage, $5,000, which will show as a liability. Your debit for this amount would be made to the Capital Account. This will reduce your Capital Account to $5,000 or the difference between the Real Estate and Building deposited as capital less the mortgage of this same building.

In showing a statement of Assets and Liabilities, you will not show an asset of $10,000 for Building and Real Estate and a liability of $5,000 for mortgage on real estate, but you will show an Asset of $10,000 Building and Real Estate and from this Asset deduct $5,000 and say "Less Contingent Liability, Mortgage," leaving a net Asset of $5,000 and an offset on the other side of your statement under Liabilities, Capital Account, $5,000.

Now we will assume that the company owns its own building and its own real estate an accordingly you do not have to pay rent for the same. But you will agree that, to show the proper expense of the building, that rent should be shown in your Expense Account. This can be accomplished in two ways. You can either assume that the interest on the mortgage and repairs and upkeep will constitute your rent, but the amount will vary, especially as to repairs and upkeep, and you will be somewhat confused as to what your actual expenses are each month. We suggest that you arrive at this in the following way:

Do It This Way

Agree on some figure which would be equitable to the business to be charged for monthly rent of the building and the premises and make an entry at the end of each month as follows:

Under the General Department charge an expense called Rent for, we will say, $100 and under All Other Accounts on the Credit side credit an account called Building Account. This, you will see, will get into your expenses the proper amount to be charged for rent of the business. And, for sake of illustration, we will assume that this has been done for a period of four months, at the end of which time you will have on the Credit side of your books against the Building account an amount of $400.

Now, when the mortgage interest comes due, instead of charging this to an expense, simply charge this interest to the Building Account, which now has $400 to its credit. All repairs and upkeep should be charged to this same Building Account and if the repairs and upkeep and mortgage interest amount to more than what you have set up in the Credit Account Buildings, then you should charge more per month for rent, and if these amounts are less than the Building Account reduce the expense for rent.

In other words, the amount that you set up per month for a period of a year should take care of your mortgage interest and upkeep and repairs of the building and we simply do it this way in order to get a regular charge.

Entering Deposits

Editor Motor World: In order that we may assure ourselves that we are making entries correctly, will you kindly detail completely the following entries:

A customer buys a car to be delivered in May and pays $100 deposit now. Another customer leaves a car worth $200 as deposit for future delivery.

We wish to keep a record of all free labor both as a total for the shop and also to have the item shown on each individual customer's account or car. This will enable us to show any customer at any time, if necessary, the amount of free service he is receiving. —W. W. Garabrandt, Franklin Motor Car Co., Utica, N. Y.

A. Jones buys a car of you to be delivered in May and makes a deposit of $100. Your entry for this transaction would be: Charge cash $100, credit Jones with like amount inasmuch as you are liable to him for the amount of his deposit until such time as the car is delivered. At the time the car is delivered to Jones the credit to him of $100 would then be adjusted.

B. In your second example, instead of paying cash, Smith leaves a car worth $200 on deposit. We believe you should put this car in your stock account and also show the liability to Smith. The entry would be: Charge Stock Account $200; credit Smith $200. Smith's account would also be adjusted at the time the new car is delivered to him.

Keeping Track of Service

C. We infer from your last question that when you sell a car you guarantee to keep it in repair for a certain period of, say, three months, and you wish to keep an account of the costs, both the total expense and amount of repairs on each car sold. This could be done very nicely by opening an account called "Reserve for Guarantee on Cars Sold."

The first car you sell is to Jones and shortly after the sale he brings the car back and you do repairs to the amount of $10. You would credit your Repair Department $10 and charge Reserve for Guarantee on Cars Sold (Car No. 1) $10. The same entry would be made on the second car sold, except that you designate this charge as car No. 2 and so on. At the end of any period you can analyze your Reserve for Guarantee on Cars Sold and tell just how much work has been done on car No. 1, No. 2, etc. The balance in this account will also give you the total amount that it has cost you for the season.

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ANGLES OF THE LAW



By George F. Kaiser

Salesman's Contract

Editor Motor World: Will you please furnish us with a copy of a contract form most commonly used in hiring retail automobile salesmen?—Elsen & Philips, La Crosse, Wis.

The contract most commonly used when hiring retail automobile salesmen seems to be no contract, or at least no written contract. Following is a form which can be used with satisfactory results. Provisions for drawing accounts, commissions, etc., can be put in to fit each particular case:

Jan. 1, 1917.

THIS AGREEMENT, MADE THE FIRST DAY OF JANUARY, 1917, BETWEEN JOHN BROWN, EMPLOYER, AND JAMES SMITH, EMPLOYEE;

WITNESSETH AS FOLLOWS:

That the said John Brown does hereby employ the said James Smith as salesman for the period of 1 *year commencing Jan.* 1, 1917, *or as long as the services of the said James Smith shall be satisfactory to the said John Brown. In the event that the said John Brown should sell, change or retire from his present business this contract may be terminated upon the giving of* 1 *week's notice.*

The said James Smith does hereby agree to give his entire time and services to the said John Brown during the aforesaid period, and in consideration thereof is to be allowed a drawing account of $50 *per week and commissions as follows:*

.....

(*Signed*) JOHN BROWN. (L.S.)
JAMES SMITH. (L.S.)

Witness:
RICHARD BLACK.

Following is a form of contract which is in use by one of New York's big dealers at the present time. By looking this over you will get some idea as to how they compute their salesmen's commissions:

Jan. 1, 1917.

MEMORANDUM OF AGREEMENT BETWEEN THE ——— COMPANY AND JOHN DOE.

The ——— Company agrees to allow the said John Doe a drawing account of $60 *per week beginning Jan.* 1, 1917.

It is further understood and agreed that after the said John Doe has earned $3,120, *based on a commission of* 18 *per cent of the net profits of the total sales for* 1916 *and* 1917 *new automobiles made by him, this said drawing account as above stated shall be discontinued and the compensation shall be paid to the said John Doe covering the commission of* 18 *per cent on the net profits.*

This net profit is to be computed by charging up all expenses on new and second-hand cars, including commissions, also repairs and guaranty work on both new and trade-in cars, said commission to be paid for the year.

It is also agreed that the said John Doe shall be entitled to a commission of 5 *per cent on all used cars which he may sell, with the exception of those taken in by himself, said commission to be paid at the end of each week.*

It is further understood and agreed that the said John Doe shall be entitled to a commission of 18 *per cent on the net profits on all sundries and tires, said commission to be paid at the end of the year.*

In the event of the sale of any demonstrating cars, or any new cars or bodies where no trade-in is expected and a loss is sustained in the transaction, John Doe is entitled to receive a commission on said sales of 2 *per cent of the net proceeds.*

This agreement shall be continued in force so long as it is mutually beneficial and satisfactory. Either or any of the parties hereto may discontinue the agreement by giving 10 *days' notice in writing.*

(*Signed*) THE ——— COMPANY,
By ———, *as President.* (SEAL.)
JOHN DOE. (L.S.)

Wants a Note

Editor Motor World: Will you please let me have a form of note for the sale of automobiles? I want a note while it is binding on purchaser yet gives me possession of car until paid for; of course, want this for use in State of Maryland. I am sending you copy of note such as they claim they are using in Baltimore. Is this all right?—J. F. Thompson, Thompson's Garage, Chestertown, Md.

No.....
$..... Baltimore.....191

I hereby promise to pay to the order of Jacob Thompson at the First National Bank, Maryland, the sum of..... Dollars in monthly installments of..... .....Dollars each accounting from the date thereof, or • months after date.

The above sum of money represents the balance of the purchase price for one Ford Automobile Number.....model....., this day purchased from said upon the following terms and conditions, that is to say:

The said shall have the option within the ten days from the day hereof to concel the sale to me of said automobile, in which event any cash payments or deposit made on account of said automobile shall be returned to me, and I agree to accept the same and return said automobile to said or its agents. I further agree to make said payments for said automobile as represented by this note promptly and punctually as above set forth, and to retain said automobile as the exclusive property of the said, who never parts with nor do I acquire any right, title or interest therein or thereto until all of said purchase money is fully paid and all the terms and conditions hereof are fully complied with by me. I further agree to retain said automobile in ..... in the State of Maryland, and to show and exhibit the same to said whenever requested to do so. I further agree not to dispose of said automobile or in any way part with the possession thereof until all of said purchase price shall have been paid. I further agree to keep said automobile in good order and condition and to take proper care thereof. I further agree that upon default in any of the payments hereunder or upon the violation of any of the conditions or stipulations herein contained, then, and in that event this agreement shall at the option of the said corporation be considered as rent for the use of said automobile during the time it shall have been in my possession, and the said corporation may at its option upon such default without demand or notice enter any premises occupied by me, and search for; remove and take said automobile without being liable in any legal action or suit for damages; I hereby waiving any action for trespass or damages of any character; and disclaiming any right of resistance thereto.

Value Received. .....(Seal)

.....(Seal)

.....
Address.

The note which you inclose seems to answer all the requirements of the Maryland law. When using it, however, do not forget that the following amendment to the Maryland law of sales was passed by your legislature last year:

"Every note sale or contract for the sale of goods and chattels, wherein the title thereto or a lien thereon is reserved until the same be paid in whole or in part, or the transfer of title is made to depend upon any condition therein expressed and possession is to be delivered to the Vendee, shall, in respect to such reservation and condition, be made as to third persons without notice until such note, sale, or contract be in writing and signed by the Vendee and be recorded in the Clerk's Office of Baltimore City or the Counties as the case may be where bills of sale are now recorded, and such recording shall be sufficient to give actual or constructive notice to third persons where a memorandum of the paper writing setting forth the date thereof, the amount due thereon, when and how payable and a brief description of the goods and chattels, therein mentioned shall have been recorded but it shall not be necessary that said paper writing be acknowledged or an affidavit made to the consideration therein expressed as in the case of bills of sale.—Effective Jan. 1, 1916, Chap. 355, L. 1916."

Under this law it is, of course, necessary for you to record your lien note in the county where you do business.

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Winter Business

Are You Doing Things?

Make a January Drive on Winter Accessories

Midwinter is here, but that is no reason why the car owner should be permitted to hibernate.

Don't you remember, as a boy, you used to slide down hill, skate, go sleigh-riding and do all sorts of outdoor stunts? And don't you remember how full of spizz you used to feel? How energetic you were? How your appetite used to be? How free from illness you were? How you could run and skate your head off and enjoy it?

There is no reason why every motorist shouldn't feel as well as when he was a boy. Tell him so. Go after him hard. Start a propaganda. Get all the dealers in your town to run advertising boosting winter motoring. Start motor-skating clubs and have them motor out into the country to a lake or a pond and skate. Let the dealers fix up a pretty, little shanty of some kind on the lake shore with a big fire where the skaters can warm up once in a while. Get the fever yourself and sell every one else.

Denver is holding motoring parties out to hotels in the foothills and is having a wonderfully successful winter. Why can't the motorists in any town motor out to a long country hill and have coasting parties? They never thought of it—and thinking of it is YOUR job.

If you get them started, or if they are now started motoring in winter, do these things:

1—Advertise in the newspapers your WINTER ACCESSORIES, such as robes, gloves, caps, foot-warmers, car heaters, radiator covers, tire chains, and other similar articles.

2—Put all these WINTER ACCESSORIES in a conspicuous place of display in your salesroom. If you have no salesroom make one.

3—Make a prospect list in a card file, including all the car owners in your territory, and send out letters advertising your WINTER ACCESSORIES.

4—Every time you send out a letter inclose a folder or booklet advertising some WINTER ACCESSORY you have in stock.

6—Go after this WINTER ACCESSORIES proposition with energy and you can make a lot of money between now and the time the spring comes. Why wait for the sun to make money for you when you can make a little yourself?

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Here's What Two Jobbers Think of Winter Business

The below is from the house organ of the Meadows-Price Co., Roanoke, Va.:

...find us there with the latest offerings, and the warmest ... of a reception.

WINTER REPAIRING

All over the country a movement is being instituted to increase winter business, the most popular measure being to bring the attention of the car owner to the many advantages of having his car over-hauled and repaired during what has usually been the slack period. This can be just as readily accomplished in our section as elsewhere, by giving it the same attention as other repairmen are doing in other sections of the country.

The proper procedure in this connection is to notify all the car owners in your particular locality not to wait until pleasant weather to have needed repairs made to their cars, but to DO IT NOW. There are many ways to bring this to their attention, but it is being found that a simple postal addressed to car owners stating that with the usual scarcity of general business during the winter months, better attention can be given to such matters, and that also the value of their car will be largely enhanced thereby, and will be at their disposal with the first chirpings of the blue birds.

Let us all, individually and collectively, boost winter repairing, and we will all be mutually benefited, and convert an otherwise usually dull season into one of great activity.

And the following is from the house organ of the Lathan Auto Supply Co., San Francisco:

...interest is solicited from those who may read its columns, as we desire to make it

WINTER BUSINESS

"Motor World" Campaign Note Worthy

The "Quality Dealer" will not play any favorites—one publication for the trade is as any other—but any Trade Paper that has shown itself so in earnest in its fight for better business for the Dealer, deserves the attention of those for whom its efforts are given

The last few issues of the "Motor World" are worthy of attention. For some unknown reason the Accessory Business is practically at a stand still during the winter months.

As there are a great many cars in actual year round service and as the number is becoming greater each year, there is little reason for the slump of business during the winter months.

"Motor World" is making a study of this condition, seeking to remedy, if only in part, this situation, and the effort is worthy of attention and support.

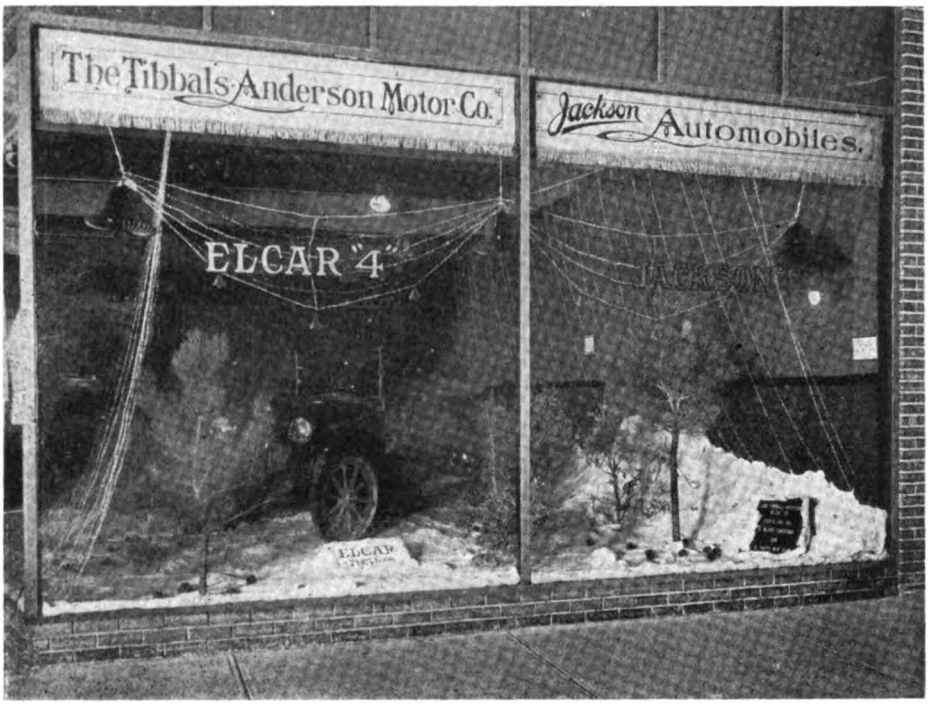
Are you reading the

DEPARTMENT OF BETTER MECHANICS?

This week on pages 60-61-62

What the Denver Association Urges Its Members to Do

THE Automobile Trades Association of Colorado has instituted a red-hot Winter Business campaign—and is getting Winter Business for its members. It urges all kinds of activity, including window displays. This picture shows an Elcar window with a car in the midst of snow. It helps drive home the motor-all-winter idea.



Try These (Above and Below)

Ford Cars and Ford Service

Now is the time to have your Car looked over and if it needs overhauling we have the time to do it right.

We carry all of Ford parts and have special Ford Wrenches for doing the work in the least possible time.

We guarantee our work.

Ford is the only Car we sell and it is to our interest to have them running right.

Bring your Car to the Ford garage.

Ripon, Wis **Maudlin Motor Co.**

The card shown above is a postal card, printed and mailed by the Maudlin Motor Co., Ripon, Wis. Several readers of Motor World have asked for a style and design for a small printed card that would tell the Winter Business story in a brief but pointed way and at the same time not be expensive. This seems to be just what they want. This card, of course, applies to Ford work, but a little alteration of the message will make it fit any kind of work. Draft one like this and go after some WINTER BUSINESS, some winter repairing, some winter storage and some winter accessory sales

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DETAILS REGARDING GARAGE 52 X 100

Editor Motor World: You were very kind in sending me suggestions and plans a few months ago. Now our building is under construction. Here are the plans as far as contracts are let. It is of brick and tile and steel girders, all heavy enough to support another floor when I need it.

How would you locate and allow for office, lavatory, small stock room, wash rack, work benches, lathe, drill press, grinder and compressor and leave a fair amount of room for storage?

The town I am locating in has a population of 3500, a suburb of Buffalo; two brick roads direct to the city, 14 miles uptown. My business will depend mostly on the farmers. It is the center of the best produce section.

I would like to limit the equipment as much as possible. Could I keep within the law by doing the electric wiring without conduit.

A hot water or steam heating plant would cost $1,200 to $1,400. There are safe natural gas garage, wall heaters, on the market. They would be very reasonable considering that our gas supply is abundant at 30 cents per thousand. Could you advise its use?

What size electric motor would you advise to be sufficient to handle a small lathe, drill press, grinder and compressor?—Chester G. Doetsch, 472 Sixth Street, Niagara Falls, N. Y.

We have provided an accessory store in the plan, Fig. 1, and an accessory stockroom, inasmuch as you probably will want to sell some accessories.

The washrack has been placed at the front in order to obtain good light, and inasmuch as you will undoubtedly only use it in the daytime, you can use this space at night for storage purposes.

From a study of your plan we doubt very much whether the position we have selected for the office will be opposite a window, but we presume that it would not be much trouble to put in another one or move one.

There is no reason why you should not use natural gas for wall heaters.

The size of your electric motor depends on your equipment and how you intend to operate it. Probably a 1 hp. motor would be sufficient. This depends on the size of the tools you choose. We would suggest that you purchase your equipment first and then decide upon the size of the motor required to drive it. If your lathe requires a maximum of ½ hp. and your air compressor requires ½ hp., then 1 hp. would be sufficient, as it is unlikely that you will be operating more than these two at one time. Of course, there is a chance that you might also be running your drill press and the emery wheel, and you must also allow for these.

We would suggest that you purchase your equipment second-hand. First, because it is much cheaper, and second, because some machine tool equipment cannot be obtained unless on several months' time. You will find second-hand electric motors and machine tools much more serviceable than second-hand automobiles. If you cannot get in touch with a reputable dealer in Buffalo, we shall be glad to refer you to one in New York.

We cannot advise you using electric wiring without conduits because we are not familiar with the local building regulations. Any electrical contractor can inform you on this point though.

DON'T FORGET!

To draw a rough plan of the block on which your plot is located. To give number of cars to be accommodated in showroom and shop. To state whether accessories are to be carried.

That we would rather draw you a plan to suit your individual case than send you plans from back issues.

That there is no charge for the work done by Motor World.

THIRTY-SIX FT. PLOT TOO NARROW

Editor Motor World: Will you please publish in Motor World plans for garage 36 ft. front with land 130 ft. deep. I want to build 36 x 110 or 120. I will use this for selling cars, repair work and handling accessories and supplies. I want to figure on brick or cement blocks. I think brick, and it will be two stories. —Allen T. Selby, Selby's Garage, Parksley, Va.

We shall be very glad to draw plans for you if you will tell us whether your lot is on a corner. We would suggest that you make a rough sketch showing the location of the lot with respect to the block it is on.

Generally speaking, we are strongly against building on a lot as narrow as 36 ft., as it is hard to efficiently lay out a building on it. If you could increase the width to 40 ft. or 45 ft., it would be very much better, as it would allow you to have sufficient aisle room in your garage so that you could have two rows of cars, one each side of a central aisle.

We should also like to know how many cars you desire to accommodate in showroom and repairshop, and whether you desire an accessory store or intend to use one part of your showroom.

If you have a man who devotes most of his time to selling accessories, we should advise a separate store. You understand, of course, that the store would be part of this building, but it would be a distinct room.

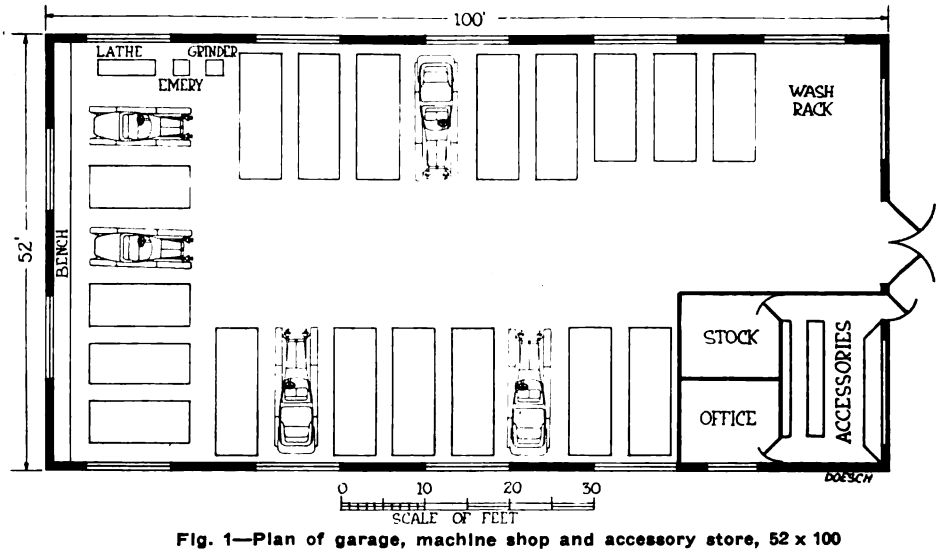


Fig. 1—Plan of garage, machine shop and accessory store, 52 x 100

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Do It This Way — QUERIES ANSWERED

How to Run Your Business

Editor Motor World: Enclosed find our check for two dollars and sixty cents ($2.60), covering a year's subscription to the Motor World and check exchange.

We have been receiving the Motor World addressed to Lener's Garage, which place we bought early in November. We surely appreciate its worth to mechanics and garagemen in general.

To begin with, we are a small firm in a small town of about 1000 people, though in a thickly populated valley, the Wenatchee. Having started late in the fall, our customer list is small, even though we retained practically all of the former owner's trade. Snow handicaps us considerably, though it does not completely tie up business until January and February—perhaps not entirely so then.

There is one other garage, a Ford agency, with whom we are and expect to be upon the best of terms. One of our firm, W. T. Terry, worked in their shop the past two seasons.

We are located on the Scenic and Sunset Highways. On the Scenic we are the first (or last) town this side of the Cascade Mountains. On the Sunset, the second. It is estimated that 12,000 cars, composed of local and eastern tourists, passed this point over the Scenic Highway after July 7, which was the date Snoqualini Pass was finally cleared of snow. This traffic passed within 75 feet of our gas pump. The Sunset Highway was not completed until late this fall.

Ford cars predominate, probably more so than in most localities. However, there is a goodly number of larger cars, and we confidently expect to increase that number by way of Oakland and Dodge sales. We also have the agency for the Wright one-ton truck attachment.

We expect to carry a full line of accessories, do vulcanizing of all kinds, and have now a fairly well equipped repairshop.

All three of us are young men. We have all had more or less shop experience, yet realize that we still have lots to learn. Managing a business is new to all three. Knowing that there is everything in a good beginning, we certainly will appreciate any timely advice you may care to send us.

We believe we are in a good location. We think we have the pep and ginger to supply the trade with all that our name implies. But, as I said before, we have lots to learn, and if we start our education upon lines followed by those who know, our chances of success are greatly increased. We want to earn the reputation of being alert and up to the minute—of being real business men. How we pull through the next three months will indicate our ability to handle real business in April.

We realize the advantages gained in advertising, even in these dull times. We plan on numerous road signs just as soon as spring travel begins.

One of our first steps was to build a neat office and decorate windows that had not been touched for three months or more. The carpenter work and staining we did ourselves, cutting the cost down to material alone amounting to about $35. More work will be done inside and out as our limited capital permits. We are endeavoring to "knock the bumps out of our business."

One more question: May we write to the Motor World and receive unbiased reports as to the quality or merits of accessories we may see advertised in different magazines and trade journals, or offered by salesmen? You can readily see how this would often save the small buyer.—The Service Garage, F. A. Wardwell, Cashmere, Wash.

We should like to see your place of business with our own eyes and have a talk with you because we believe we could make suggestions that would be of assistance to you, but since we cannot do this we shall try to say a few things in a letter.

First we wish to state that we are greatly impressed with your statement that you wish to be always found on the alert and desire to build your business well.

You have done well indeed to fix up an office and take advantage of your show windows. That one step indicates aggression on your part.

Cleanliness Big Asset

First we suggest that you make your place of business clean and keep it in perfect order. It takes but a few words for us to say this, yet it is a life job for you. It is so easy to let the place run down, and when it begins to run down the business goes with it.

You will find it hard to change your window display every week, but you certainly should do it.

You may find it difficult to keep a good accounting system operating, but you never will make much of a success unless you will pay attention to this feature. If you have not a good system we suggest that you correspond with Motor World's System Department.

Always be on the square with your customers and be sure that a man gets attention the minute he reaches your door; do not let him stand for an instant. If a car stops at your gas pump have a man out there immediately, and carry out this same idea all the way through your business. The average human being does not mind paying a cent more a gallon for gasoline if he can get good service.

Study the class of trade you have. If you are between large towns and if summer tourists have no other place to get cigars, cigarettes and tobacco you may, with profit, put in a small showcase in a conspicuous place and sell these and all sorts of goods, but in everything proceed cautiously rather than recklessly, and do not overstock.

Give attention to your accessory and supply departments. Have the goods the people want. If there is a demand for an article during the summer, have it on hand before the summer rush begins, and be able to supply the goods the tourists need. Your summer season should be your money maker.

Have plenty of signs. We have seen one striking sign about 8 x 14 inches on sticks about two feet high, each sign carrying one word. These are very easily read as the car dashes along the highway, and are very original.

Endeavor to build up a list of prospect customers and mail them letters and various pieces of advertisements from time to time.

Advertising in Hotels

Endeavor to arrange for advertising in hotels in the next towns. Possibly you can get a hotel clerk or garage man in those towns to co-operate with you and boost your business.

Give special attention to your truck attachment. Make a list of a number of men who you think would use this and go after them systematically, one by one in personal calls, send them advertising literature and letters, and get as many running as you can. Do not wait for people to come in and demand this device. You will have to push it.

As to managing the business, could not one of you three men be the manager of the whole business and let the other two be managers of departments? The best mechanic could be repair manager and so forth. This will mean that one of you will technically be the boss over the other two, but an organization must have a head, and since you are all working together for the success of the whole business this arrangement should not be difficult. In the meantime we suggest that you read Motor World very closely. Do not get the mistaken idea that you have not the time to read Motor World or anything else as the summer rush comes, as thousands of dealers and garagemen cease to read their trade papers. You will find it advantageous to set apart a few minutes each day or each week, even if it takes a few hours from your night's sleep, to read Motor World and any other good books or papers you can get hold of.

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(NO. 1011) FORD ENGINE LIFTING HOOK

This lifting hook is used in conjunction with a chain block to remove the Ford engine from the frame. It is in two parts, one U-shaped, and bent in the manner shown, having eyes to catch two manifold stud nuts, the other fastened to it, and bent to grab below the water jacket between the second and third cylinders. Ordinarily the manifolds, cylinder head, transmission case cover and crank-case base are removed, the illustration showing the application of the hook. When these are removed the engine will balance.—Orlen J. Chestnut, Foreman with Ford Service Station, Lawton, Mich.

(NO. 1012) OIL STORAGE SYSTEM

An oil storage system whereby the oil is discharged by gravity, is shown. It comprises several tanks, as many as there are kinds of oil to be stored, held close to the ceiling on pipe standards, and each pipe connected to its discharge valve. Oil is transferred from the original barrel by air pressure, through a special connection, in the manner illustrated. In addition to facilitating the withdrawal of oil, this method gets the storage tanks up out of the way, and saves much valuable room.—J. M. Breitenbach, Chandler Service, New York.

(NO. 1013) STEEL AUXILIARY JACK

Whenever possible, repairshop equipment should be steel, as it is more durable than wood, besides being fireproof. A steel auxiliary jack is illustrated, being made throughout of angle and strap iron members, with all joints welded. Where the welding equipment is not accessible, the joints could be readily riveted or bolted together.—J. M. Breitenbach, Chandler Service, New York.

(NO. 1014) SAND STORAGE

A supply of sand is almost a necessity around a repairshop, both as a fire extinguisher and as a medium for cleaning up oil or grease. It may be conveniently stored in an overhead bin, placed on a mezzanine floor, as illustrated. A chute and draw-valve permit the sand to be readily drawn into a pail or box, and the bin is out of the way. All sides of the bin should slope toward the chute, to prevent the possibility of clogging.—J. M. Breitenbach, Chandler Service, New York.

To the Man in the Shop

YOU have received ideas from this department and have been enabled to do your work easier. Each of the devices illustrated was built by a mechanic to fill some definite need, and unselfishly turned over to us to aid you in your work. You, in turn, have modified it in your requirements, perhaps have finished with something of entirely different design and principle.

IN any case, co-operate with us and in turn aid those that have aided you. Make a rough pencil sketch of your devices, tell us what they do, and we will do the rest.

DO IT NOW

(NO. 1015) SPRING LEAF OPENER

Spring leaves may be forced apart for the purpose of lubrication, by the aid of this opener It comprises a channel-section, carrying at one end a fixed jaw, and at the other a movable jaw, actuated by a lever and cam in the manner shown. The two jaws are tool steel, hardened and tempered, that they may not be injured in forcing the leaves apart, and due to the cam shape, the jaws are locked in the closed position. A coiled spring in the central channel serves to keep the movable jaw against the cam face.—J. M. Breitenbach, Chandler Service, New York.

(NO. 1016) WELDING TORCH LIGHTER

The continual nuisance of obtaining and lighting a match every time the welding torch goes out may be obviated by the use of a lighted kerosene torch hanging near the welding table. This torch is lighted at the start of the work, and its use saves much time for the mechanic.—J. M. Breitenbach, Chandler Service, New York.

(NO. 1017) EXTENSION LAMP LOCK

Misplacement or theft of inspection lamps can be prevented by the use of the simple extension lamp lock shown. Each half of the common rectangular plug-connector was drilled through at a point that would not touch the conductors, and the two joined by steel loops as illustrated. The ends of the bolts were headed over to make the removal of the locking loops more difficult.—J. M. Breitenbach, Chandler Service, New York.

(NO. 1018) PORTABLE BENCH

The portable repairshop bench illustrated possesses many valuable advantages. It is a complete unit in itself, with extension lamp, vise, parts-compartments, and a place for tools, in addition to the bench proper. The frame is steel, with all joints welded, and the bench top and shelves are hard wood. These benches have been found so valuable that one is provided for each car-stand in the station, as they enable the mechanic to have light, tools, a place for parts, and a bench at just the point most needed.—J. M. Breitenbach, Chandler Service, New York.

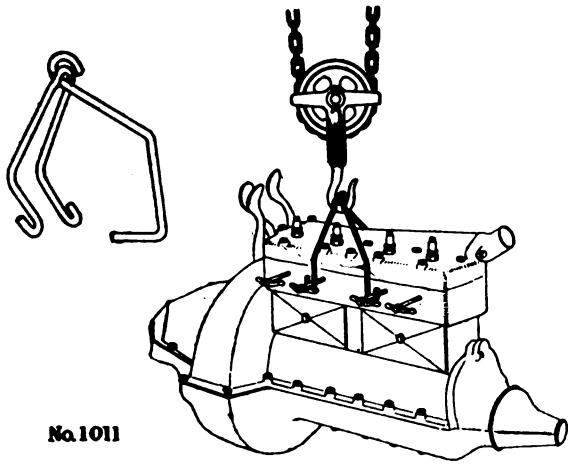
(NO. 1019) DRIVESHAFT HOOK

The hook illustrated is used to hold the driveshaft from contact with the floor after the removal of the gearbox. It is a steel rod, bent in the form of a double hook, one end engaging the drive shaft, and the other being used as a handle, or as a catch on the floor board. This hook, or a similar hook, may be used to remove and replace storage batteries.—J. M. Breitenbach, Chandler Service, New York.

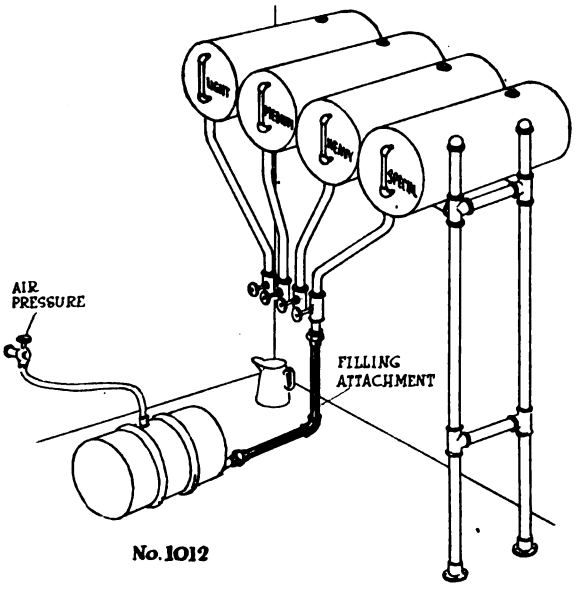
(NO. 1020) WHEEL PULLER

This steering wheel puller was designed primarily for the Chandler, but may be readily adapted to the requirements of many cars. It comprises a flat metal plate, carrying hinged jaws at both ends, these jaws being formed in the manner shown, that they may be inserted through the spider of the wheel, and engage the wheel hub, permitting the removing force to be applied through the central screw.—J. M. Breitenbach, Chandler Service, New York.

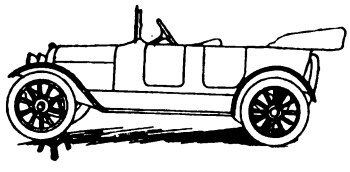
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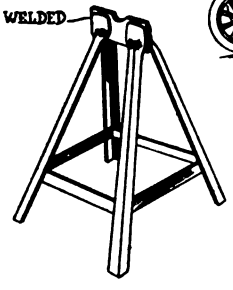
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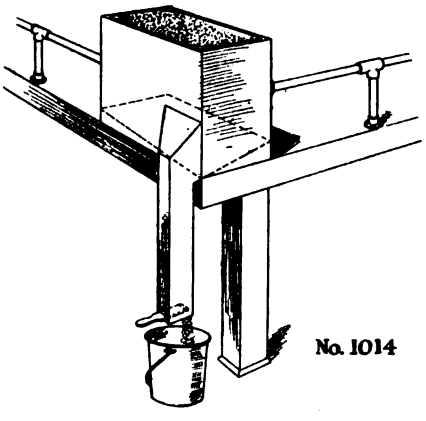


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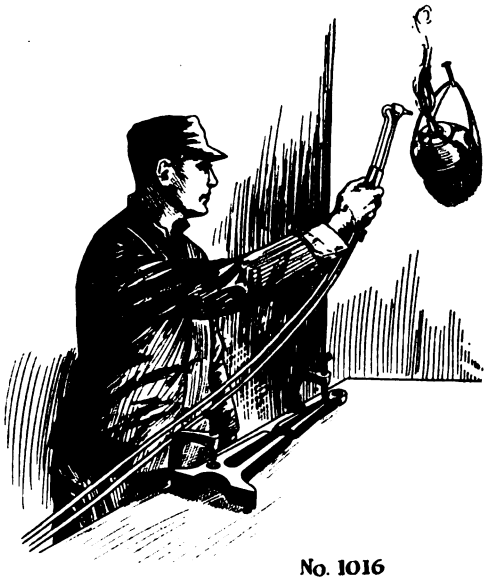


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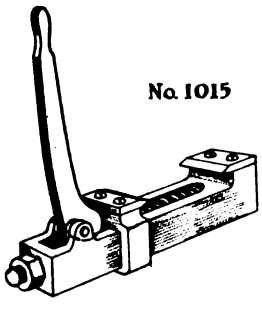




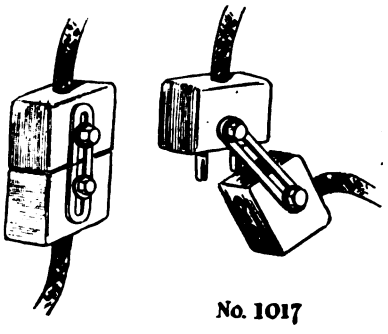
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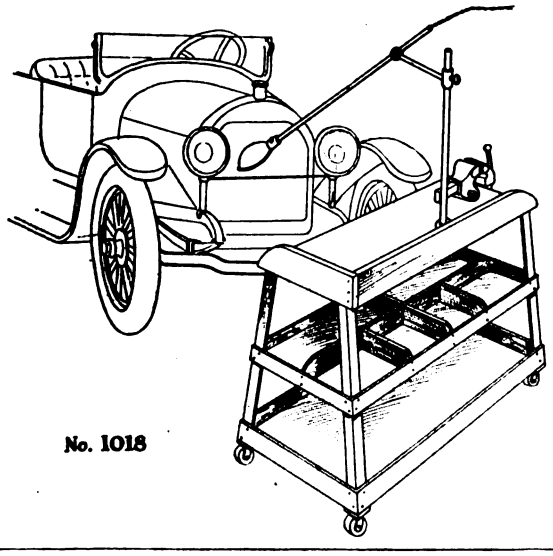
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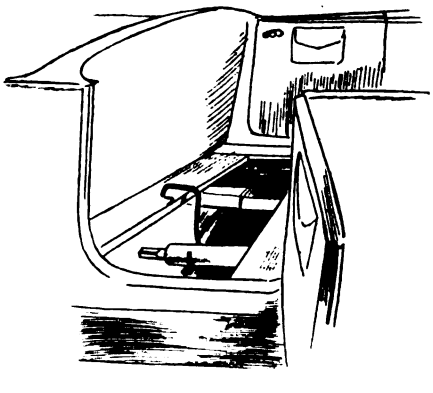
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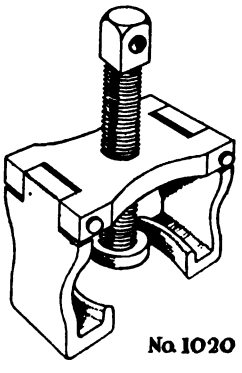
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EDITORIAL OBSERVATION

Don't Knock, Boys

AT one of the series of factory dinners held last year over the winter's show circuit the speakers connected with one factory made remarks that were, from the standpoint of many, regrettable. These speakers unmercifully "panned" their competitors. Competing cars were mentioned by name, all sorts of unkind things were said, "knocking" was general and the inference was that most of the competitors would have a hard time "getting away with it."

This year this same company is staging one of the most constructive sales-efficient dinners that has ever been seen in the industry. It is giving the dealers information of a kind that can—and will—make them better dealers. The things that were said last winter never did and never will help any one in the industry or out of it.

In the light of "a year later" it is interesting to look back and see how utterly foolish it is to knock. A year ago this sales manager may have thought he was doing a fine thing. To-day he can look back and see that about all he did was advertise his competitors, and since they have all had excellent years they doubtless are the only ones benefited. Last winter's talk was regarded as extremely nasty by some of this company's best dealers.

In this modern era the real merchandisers have learned the folly of knocking and are trying to teach the dealers and salesmen not to knock. It is bad taste for a factory to set its dealers an example as a knocker.

We are all one big industry, the most glorious, splendid in the world. Motor car men as a class average better than in other big trades. To quarrel on the inside is bad, very bad. If we can't pull with the rest of the industry for the success of the industry let's sit back, say nothing—and be gentlemen.

The show season is beginning. Don't knock.

Which First, Fun or Business?

ONE point worthy of consideration by the factories which held dealer dinners during the New York show and which will hold many more this winter is:

Which shall come first, the vaudeville or the speeches? That, of course, applies to those dinners which have both, for some dinners have all speeches and some all vaudeville.

This much has been demonstrated on many occasions:

It is practically impossible to get a bunch of merry-making diners to settle down after two hours of vaudeville and listen to serious addresses. There always are a few who never can entirely subside into quiet and these few by not always subdued remarks in different parts of the room make it unpleasant for all present—for most wish to listen.

This noise also makes it hard for the speakers. No man can talk well if he has to run opposition to a half dozen other talkers, and that is virtually what a noisy meeting amounts to. The speaker cannot put the force and spirit and information into his talk that is possible if he seems to have the attention and interest of the audience.

There seem to be three solutions:

1—Dispense with either vaudeville or speaking.

2—Put the speaking first and turn things loose during the second half.

3—Alternate the speaking and vaudeville in such a manner that the diners will get into the habit of settling down every now and then.

To eliminate all enjoyment would make some dinners very funereal, for some of the speeches are rather dry. Some of the speakers give real, worth-while talks on methods that cannot help but increase the efficiency and earning power of the dealers, and unless the talks are to be worth-while they might better be omitted and the meeting turned into a pure good-fellowship affair.

But if there are to be talks, those who arrange the dinners should consider this vaudeville-speech question.

Almost any man would condescend to listen to a few speeches if he were assured of good vaudeville afterward, but few men who have heard vaudeville are in a mood to apply their minds to the serious side of life.

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What Is a Dealer?

Editor Motor World: Referring to your editorial page in reference to "What Is a Dealer?" will say that in the accessory business the term "dealer" is as clear as mud and we have often tried to define the term "dealer" ourselves.

The National Association of Automobile Accessory Jobbers has defined the term "jobber," but hardly believe any result can be obtained in trying to define the word mentioned above.

Ofttimes we have customers representing themselves as dealers, which we in no way question when they present their cards showing a certain car they sell. In most cases these parties also represent themselves as mechanics, but in talking to them one can readily find they do not know the difference in the sizes of spark plugs.

We have other customers who can answer all questions from an accessory standpoint and still do not sell cars nor stock accessories, and yet we are obliged to recognize them as dealers.

We therefore would certainly appreciate some advice along this line.—C. & D. Auto Supply Co., William Evans, Manager, Cincinnati.

Mr. Clark, Please!

H. S. Hayes, a Detroit mechanic, who read in Motor World that Representative Clark of Michigan considered introducing a bill licensing mechanics, asks that we forward this letter to Mr. Clark. We have done so. Also, the attention of all garage and service-station operators is called to what Hayes says. Comment is invited.

Hon. Charles W. Clark,
Lansing, Mich.

Dear Sir: Would it not be well to introduce a bill in the legislature to classify garages in the State of Michigan?

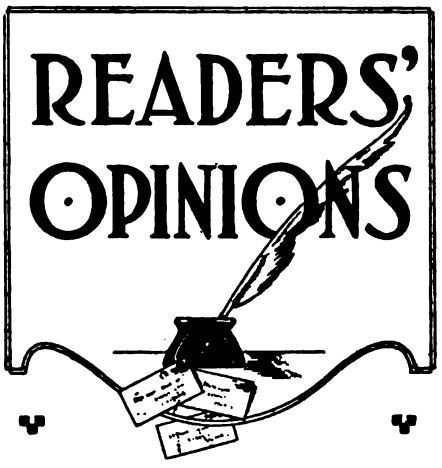
I am a repairman and would like to give my views in the matter. The garages to which I shall refer are supposed to be first-class establishments.

Automobile manufacturers generally charge unreasonably for repair parts; sometimes we question whether they are trying to make money selling cars or parts.

Garages generally are not properly equipped for repair work, some being little more than storehouses.

The equipment of one garage in which I have worked consisted of the tools that each repairman carried with him, in addition to a hand drill that had to be sent out for sharpening when the drills became dull. The capacity of this particular garage is 125 cars. Another garage on the same street, capable of housing 240 cars, is no better equipped, and others in the same locality are in the same class.

At the present time I am employed in a service station where the facilities are better but far from what they should be. There isn't such a thing as a gear puller in the shop, the emery wheel is too light for the work we have to do, which also is true of the mantle press, and we have no surface or test indicator.



As a general rule, outside of minor repairs and adjustments few garages are qualified to do the work which falls within their scope. The proprietors do not seem inclined to invest money in proper working tools. Then, some cars are so built that the parts are very inaccessible, which makes matters worse.

Most garages charge 75 cents an hour for a repairman's time; the repairman gets from 30 to 45 cents an hour, though very few of them get the 45-cent rate. I have worked in garages where my feet have been wet most of the time; where I was grease from head to foot; where men have been overcome with the escaping gas, and where we worked overtime and Sundays.

Perhaps you, like other owners, have been hard hit with heavy repair bills; but simply to license repairmen will do little toward correcting the evil. As I see it, automobile repairing must be recognized as a trade and the repairmen recognized as tradesmen, the same as masons, machinists, toolmakers, etc. Would you license them?

At the present time automobile repairmen are not organized as a body, and to license them would be putting a tax on labor. Will the constitution of the United States countenance this? Without organization we cannot demand a wage scale.

If ever you visit Detroit I should like the opportunity of showing you some of our supposedly up-to-date garages.—H. S. HAYES, Detroit.

Better Wages Wanted

Editor Motor World: I have read with great interest what you have to say in Motor World of Dec. 6 about the scarcity of competent automobile mechanics and the readiness with which good men are snapped up at high wages by enterprising garage owners and dealers.

I fully agree with Motor World concerning the incompetence of the majority of the men who are repairing automobiles, but do not agree with the statement that "a mechanic who knows his business can command almost any wage he wants." I think that dealers who will pay a price that would be called good compared with the earnings of other tradesmen are scarcer even than good mechanics.

To better illustrate this point I might draw from my own personal experience, which is similar to that of many others I have observed. I date my experience as an automobile mechanic from 1907, previous to which time I had served time as a machinist and in the erection of large steam and gas engines and electrical machinery. In this time I have been connected with several large garages and have always been able to organize and manage same so that the quality of the work turned out was satisfactory to all parties concerned.

I am a reader of some half-dozen automobile and mechanical magazines, and attend the Chicago and one or two smaller shows each year, all of which is necessary in order to keep up with the progress of the industry. But this makes quite an inroad in a mechanic's savings account, and is an expense which is unnecessary for plumbers, plasterers, bricklayers and other trades where the pay is as good or better.

Occasionally I have heard of a garage owner who paid a high price and kept his man, but I find that even the good men are almost always changing about looking for a place where the compensation is in keeping with the time and money expended to become "a mechanic who really knows his business."

When the dealer and garage owner makes up his mind to pay good money he will find that there will be plenty of capable men attracted to the industry who can and will do the work, and who are ambitious to excel in their line, the same as in other lines.—"Conn."

AIM FOR A LARGE, BROAD-GAGED BUSINESS SUCCESS

Editor Motor World: In all fields of commercial, economic and industrial life most of the difficulties and trials are due to lack of understanding, one with the other.

The average business man of to-day is overhungry for a kind and sympathetic word, and the least kindness is often returned a hundredfold. If we are going to handle successfully this twentieth century human nature we have got to help them, to understand them, to be able to sympathize with their difficulties, their trials and with their achievements. When we have gained this attitude of mind and tried appealing to this side of man we have accomplished the thing that does the most good and the least harm and the help that nourishes civilization at its very root.

If we aim for a large, broad-gaged business success, whether or not we sell our labor, don't expect too much but be willing to give rather than to receive. Meet your fellow-man as if he were your friend and really a human being and the year 1917 will be the most satisfactory year you ever had.—R. B. Dodson.

Jackson, Miss., Dec. 31, 1916.

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The RETAIL NEWS

COAST

C. Brixen, San Juan, Cal., has sold his garage to L. Rickabaugh of San Francisco, and moved to Idaho with his family, where he intends to enter the garage business.

The Oldfield Garage, Selma, Cal., has been opened at 2032 East Front Street.

The George I. Lufkin Co., Los Angeles, has been appointed southern California and Arizona distributor of the Davis.

The Walter M. Murphy Motor Sales Co., Pasadena, Cal., has opened a garage, and is handling the Marmon, in addition to accessories. A large building to be used by the Murphy company is in course of construction at 285 West Colorado Street. Associated with Walter M. Murphy as manager is Richard F. Carlson, brother of the late racing favorite, Billy Carlson, who was killed at Tacoma July 4, 1915.

J. V. St. Clair, El Centro, Cal., has opened a well-equipped garage at State and Fifth Streets.

The H. B. Rector Co., San Francisco, has moved into the new garage and service station just completed at 1656-66 California Street.

The Williams & Kaar Auto Sales Co., Bakersfield, Cal., has opened a garage and service station at 1100 Nineteenth Street, and is handling the King, Dort, Franklin and Scripps-Booth.

The Lush Garage, Orange, Cal., is now the Lush & Danswood Garage.

Roy G. Stuart, Riverside, Cal., has sold out to Button Bros.

Culp & Hamilton, Whittier, Cal., have bought out the Mission Garage.

The Pico Tire Shop, Los Angeles, has moved to Main and Pico, from 115 West Pico.

The Wilshire Garage, 827 South Vernon Avenue, Los Angeles, has been purchased by Carl Klemp, and is now the Wilshire Auto and Battery Co.

The Benton Auto Supply Co., Long Beach, Cal., has been purchased by Hall & Pequenat.

G. N. Yoder, Long Beach, Cal., has purchased the Fourth Street Garage, formerly owned by H. E. Martin.

L. A. Forrest, Los Angeles, has purchased the garage business of Harry M. Inglis, located at 6801 Compton Avenue.

The Palace Garage Co., Portland, Ore., has opened at 704 Kearney Street and inaugurated a Ford service department, and are also authorized Ford agents.

The Pacific Kissel Kar branch, Portland, Ore., has closed a deal whereby it becomes a Ford dealer, now handling the Ford, Kissel and Briscoe.

The Starr Motor Truck and Tractor Attachment Co., Sedro Woolley, Wash., has been incorporated by C. E. Starr and John A. Thompson; capitalization $5,000.

The Wever Motor Car Co., Tacoma, Wash., is the successor to Wever & Hood, the business having been purchased by Fred O. Wever.

MOUNTAIN

A. E. Jones, Colorado Springs, Col., formerly agent for De Luxe bodies for the States of Colorado, New Mexico and Wyoming, is now connected with the Studebaker Motor Co. of Colorado Springs.

NORTHWEST

C. B. Fetterly and J. A. Smith, Shields, N. D., will build a garage.

Charles Lohuis, Lemmon, S. D., has opened a garage.

William Erdman, Forbes, N. D., has opened a garage.

The Knudsen Automobile Co., Duluth, has leased a large furniture building at Second Avenue East and Superior Street, and March 1 will handle the Paige and Maxwell, and Republic trucks. One floor will be for showrooms, one for repairs, and two more for storage and shops.

A. W. Harwood, Minneapolis, will build a garage at Lyndale Avenue and Lake Street.

George M. Miller, Minneapolis, will build a garage at 312 East Lake Street, 80 x 80, one story.

The Leighton Investment Co., Minneapolis, will build a garage to cost $40,000 at 920 Second Avenue S.

L. H. Fawkes, Minneapolis, of the Fawkes Automobile Co., will build a garage to cost $45,000, three stories, at 1637 Hennepin Avenue.

A. W. Duncan, Minneapolis, will build a garage to cost $20,000, two stories, at 2924 Lyndale Avenue S.

W. S. Milnor, Minneapolis, will build a garage to cost $30,000, one story, at 38 Twelfth Street S.

J. M. Heimer, North St. Paul, Minn., has sold his garage to McInerney Bros. of Long Lake, Minn.

Peterson & Rotnew, Slayton, Minn., have opened their new garage.

P. S. Sorenson, Arco, Minn., has opened a garage, 50 x 64.

J. A. and F. H. Skallcky, Blooming Prairie, Minn., will open a repair shop.

Martin Olum and Fred Hoger, Hillsboro, N. D., have sold their interests in the Hillsboro Auto Co. to Steven Steenson.

The Joseph Young garage, Minot, N. D., burned, with $2,000 loss.

The Champlin Implement Co., Minot, N. D., is building a filling station.

Michael Breen, Westbrook, Minn., will build a garage.

The Alfred Knick Garage, Grove City, Minn., has been sold to Christ and Thor Kallevig of Willmar, Minn.

The Atlas Realty Co., Butte, Mont., will build a garage to cost $28,000.

The Motor Inn Co., Albert Lea, Minn., will build an addition. Dr. A. C. Watland is president.

E. F. Walch, Rollingstone, Minn., will build a garage.

The Custer Garage, Bird Island, Minn., burned, with $15,000 loss.

Joseph Krause, Mound, Minn., has begun a new garage.

The Chancellor Garage Co., Chancellor, S. D., has plans for a garage, 50 x 100.

W. L. Seeley, Wolsey, S. D., has bought the J. P. Anderson Garage.

The Madison Auto Supply Co., Madison, S. D., has been incorporated at $25,000 by T. R. Smith, M. E. Smith and A. W. Smith.

Henry Haroldson, Aneta, N. D., has become sole owner of the East Side Garage.

H. C. Monstad, Hettinger, N. D., and his son, W. L. Monstad, have bought out the Daly Auto Co.

McReady & Abrahamson, Malta, Mont., have opened a new garage.

Fred Worner & Son, Hankinson, N. D., have bought the Cement Block & Building Co. building, and will make it into a garage and repair shop.

J. J. White, Coggswell, N. D., will rebuild his garage.

C. B. Fetterly and J. A. Smith, Shields, N. D., will build a garage.

H. A. Myers, Lankin, N. D., has begun an addition to his garage, 24 x 85.

John Wolf, Fairmont, Minn., has sold his interest in the Fairmont Auto & Realty Co. to his partners.

B. A. Norseen, Westby, Mont., will erect a large garage.

A. G. Rosendahl, Adams, N. D., will erect a garage. He is from Kindred, N. D.

Antone Jydstrup and Engvald Johnson, Summit, S. D., will remodel the opera house into a garage.

Charles VanDeusen, Tracy, Minn., has bought the interest of his partner, Frank Reigard, in the garage on Front Street.

The Webster R. Smith Co., Anoka, Minn., is improving its garage building.

Minneapolis.—Formal opening of the Fawkes automobile building, at Harmon Place and Hennepin Avenue, was Jan. 2-6. This is a three-story building of unusual architecture. It is occupied by the following firms: Bohn E. Fawkes, Oldsmobile; Fawkes Automobile Co., Reo and Stutz; Brice Automobile Co.; Grant; Carlson Motor Co., Kissel Kar; Chevrolet Motor Co., and Winton Co.

The Falls Tire Co., Minneapolis, has opened a salesroom at 1123 Nicollet Avenue.

D. G. Hedderly & Son., Minneapolis, dealers in used cars, have moved from 1521 Hennepin Avenue to 921 Hennepin Avenue.

R. W. Munzer & Sons, Minneapolis, handling the King, at 907 Hennepin Avenue, have announced that they are going out of business.

The Kemmerer & McDowell Auto Co., Main Street, Parkersburg, Iowa, has broken ground for a new garage, which is to be built on the lots south of City Hall. It will be 60 x 110, of steel and brick. The Ford and Buick are handled.

Grant Blinn, Stuart, Neb., has bought out his partner in the Blinn & James Garage.

The Palace Garage, Randolph, Neb., has opened a branch at McLean, Neb., which will be known as the Palace Garage Co.

Lew Holston, Trenton, Neb., has sold his garage to Grover Hay.

The Auburn Auto Co., York, Neb., has been incorporated by R. R. Newman and M. E. Baker, and business will be opened as soon as a suitable site can be chosen.

John Walters, Kemmerer, Wyo., has bought the interest of his partner, Bert Carollo, in the Up-to-Date Garage.

E. W. Alson, Chappell, Neb., has bought the O. O. McPheeters Garage.

Ben Bonham, Smith Center, Neb., has bought a half interest in the East Side Garage at Franklin, Neb.

The Ideal Garage, Homer, Neb., has opened for business in a new building.

Grassmucek & Maus, Loup City, Neb., have opened a new garage.

The Nichols-Rice Motor Co., Omaha, Neb., has been incorporated at $10,000. The incorporators are Neal W. Nichols, Charles H. Rice and B. E. Hemming.

The Yellow Cab Carage Co., Omaha, Neb., has been incorporated at $10,000 by Joseph H. Sutley and Frank Williams.

John Linn, Greybull, Wyo., has bought the interest of C. W. Siler, and will conduct the Public Garage alone.

F. J. Skolil, Comstock, Neb., has opened a new garage.

The Zapp Garage, Inc., Fremont, Neb., has succeeded the Zapp Auto Co., with the purchase of shares by Samuel Chinn and Owen Sink, and a reorganization of the business.

Raymond Fisher, Villisca, Iowa, has bought the E. M. Nelson interest in the Nelson & Bunnell Garage, on Lower Main Street.

The Standard Motor Co., Omaha, Neb., has occupied its new quarters at 2020-2022 Farnam Street, which have been thoroughly remodeled. The company has added the Jeffery to the Allen and Empire.

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The Electric Garage, Fremont, Neb., has taken the Maxwell agency from W. L. Golden.

The Raapke Motor Co., Omaha, Neb., has opened in the Dresher building on Automobile Row, and will handle the Oldsmobile.

The Nebraska Paterson Co., Omaha, Neb., is a new organization, which will handle the Paterson in the northern half of Nebraska and in five Iowa counties. The firm has taken quarters on Automobile Row.

SOUTH

D. O. Myatt, New Orleans, has been made sales manager for the Stoutz Motor Co., Saxon car distributer.

The Sherouse-Steele Motor Car Co., New Orleans, has been organized to handle the Reo. Until a new building can be erected, the company will be at 807 St. Charles street. Contracts have been let for a $27,000 home on Lee Circle.

The Sutter Motor Car Co., New Orleans, organized to handle the Westcott, has opened showrooms at 1037 Carondelet Street.

Ashton Blum, New Orleans, Ford dealer, has moved into larger quarters at 741 St. Charles Street.

The Hood Tire Co., Inc., Atlanta, Ga., has opened a factory branch at 247 Peachtree Street. R. C. Loes is manager and I. W. Hill, district sales manager, will make his headquarters at the branch.

The D. A. Young Motor Car Co., Birmingham, Ala., has opened a service station for Packard cars, which that company handles, at 2308 First Avenue. F. E. Fitzpatrick came from the Packard factory to take charge.

E. C. Creel, Birmingham, Ala., factory representative of the Chevrolet Automobile Co., has become sales manager of the Edwards Motor Car Co., Chevrolet distributer in that city.

The Kline Motor Car Co., Richmond, Va., will open retail salesrooms for the Kline at 322 West Broad street. The Kline is advertised as a "Richmond product." R. H. Rawlings of Mount Kisco, N. Y., will be in charge of the retail here and the Virginia distribution.

The Tennessee Auto Sales Co., Memphis, has opened shops at 251 Monroe Avenue, to handle the Jones-Glaser commercial bodies for Fords.

The Southern Motor Car Co., Memphis, Tenn., is erecting a building at Monroe Avenue and Marshal Street, an octagon-shaped showroom for automobiles, and a garage. The total cost will be $17,000. The company now sells Mitchell cars at 614 Monroe Avenue.

The V. E. Scheveneil Co., Memphis, Tenn., has been named distributer of the Princess in Tennessee, Alabama, Mississippi and Arkansas.

The J. T. Lloyd Co., Little Rock, Ark., has removed to 309-311 Louisiana Street. The company sells sporting goods and the Jeffery and Marmon, and in the new location will open a repair shop and service station.

The Reliable Auto Co., Little Rock, Ark., has bought the Little Rock Auto Co. plant at 311 West Third Street, and will put in new equipment for repairs and maintain a day and night service. John Mitchell is president of the company.

L. H. Dalhoff, Little Rock, Ark., formerly of Thompson & Dalhoff, has been made sales manager for the Green Motor Car Co., of that city, Studebaker distributer.

MIDDLE WEST

J. T. Roebuck, Dowagiac, Mich., has been appointed local dealer for the Oldsmobile.

The Demers Auto Exchange, Saginaw, formerly located on Germania Avenue, has taken possession of its new salesroom and garage on Germania Avenue and South Park Street. The building is 140 x 60. The Maxwell is handled.

Slack Bros., Bad Axe., Mich., has opened in the Sleeper block. They handle the Dodge.

The Carey Auto Co., Harbor Springs, Mich., has a new garage and service station under course of construction, and will also open service stations and salesrooms in Charlevoix and Petoskey.

James F. Knowlton, Grand Rapids, will build a garage, costing about $6,500, at 312 Ionia Avenue.

The Paterson Sales Co., Flint, has opened an annex to its garage on South Saginaw and Fifth Streets.

Mandy Seymour, Hesperia, Mich., is opening a garage. He will store Overland cars and keep Overland supplies for the winter.

F. N. Birchard, Clarksville, Mich., has opened a Ford agency.

Merton Haines, Imlay City, Mich., has been appointed dealer for the Reo.

A. D. Jones, Potterville, Mich., has sold his garage to Fhaner Bros., but will retain the vulcanizing plant and auto livery.

J. C. Foster, Newberry, Mich., has purchased the Newberry Garage from Sweney & Knutson, and will operate it in connection with his hardware and automobile business.

Maso & Whitich, Fennimore, Wis., have disposed of their garage, repair shop and accessory business to Irvin Draves and Walter Pendleton, and will devote their attention exclusively to the sale of Buick, Oakland and Ford cars.

Hardy & Callahan, Neshkoro, Wis., have opened a new garage and repair shop under the style of Neshkoro Garage and Livery. The shop and garage will be in charge of A. G. Tassler and Gilbert King.

The Milwaukee Auto Painting Co., Milwaukee, has been organized with a capital stock of $5,000 by D. C. Barbee, H. O. Wolfe and M. Horth, to establish a painting, trimming and refinishing shop.

Honaker & Hornby, Liberty Pole, near Viroqua, Wis., have broken ground for a new garage and repair shop, to cost $5,000.

Ottum & Thompson, McFarland, Dane County, Wis., are remodeling and modernizing their garage, and increasing the facilities of all departments.

C. F. Lamberton, Grand Rapids, Wis., has opened a motor car repair shop and service station in the J. E. Daly building, on Second Street.

A. H. Grey, Tomah, Wis., is having plans prepared for a new garage and salesroom building, to be 50 x 100 ft. in size, and cost about $4,500.

Ever Olson, Boscobel, Wis., is erecting a new fireproof garage, 52 x 126 ft. in size, part one and part two stories high, with full basement.

The Cumberland Supply Co., Cumberland, Wis., has been appointed Dort dealer.

Diedrich Bros., Wauwatosa, Wis., Ford dealers, have opened their new garage and service station at 244-246 Wisconsin Avenue, in that suburb of Milwaukee.

The G. A. Gullikson Co., Stevens Point, Wis., sustained a loss of $3,000 by fire in their warehouse, which was recently rebuilt. The garage was not damaged.

F. E. Brown, Columbus, Ohio, manager of the Ohio Puncture Plugger Sales Co., will open the Southern branch of the company at New Orleans early in February. New Orleans will be headquarters for the distribution of the puncture plugger in the surrounding territory. A sales campaign will be inaugurated in Florida shortly after Jan. 1.

A. R. Fagerholm, Aurora, Ill., has taken a long lease on the building at 22 South River Street, and will operate a garage as soon as the structure can be remodelled.

The Buckeye Tire & Supply Co. has asked the court to appoint a receiver for the Eigensee & Douglass Co., which operates a garage and repair shop at 1176 East Main Street. It is avered that the concern is insolvent.

Orville M. Farner, Rutland, Ill., has purchased the garage of the Ingram Motor Car Co. J. E. Ingram, who retired, is distributing agent for sixteen counties of central Illinois for the Jeffery car, and has transferred his headquarters to Peoria, Ill.

Isch Bros. & Hackshaw, Peoria, Ill., have leased the abandoned power house of the Peoria Street Railway Company, and will remodel it for a garage, sales agency and service station.

Forbes & Taylor, Clinton, Ill., have dissolved partnership, J. E. Taylor retiring to embark in the motor livery business, while R. E. Forbes will continue to operate the garage and sales agency.

The Mackemer Motor Car Co., Canton, Ill., has purchased a lot upon which will be erected a modern garage, 50 x 180, two stories.

C. U. Williams & Son, Bloomington, Ill., have met with great success in disposing of used cars by the opening of a special department for their sale and exchange. Each month, the firm issues a bulletin, giving a complete list of the used cars on hand, with a description and make of each, and the price. These bulletins can be had upon application to the firm, and copies are also mailed to those thought likely to be in the market for a second-hand car. The firm believes that the new system has been effective in disposing of the used cars, and that many more have been sold than would have been the case with ordinary methods.

Charles S. Mohson, Dimes Savings Bank Building, Detroit, will distribute the Boyce Moto-Meter throughout the Middle West. He will open a branch office in Chicago.

The Chalmers-Smith Motor Co., Detroit, effective Jan. 1, will be the Smith Motor Co.

EAST

The P. J. Durham Co., 244-250 West Forty-ninth Street, New York, has opened a Newark, N. J., branch at 235 Central Avenue, as New Jersey headquarters for the distribution of Gray & Davis products, including electric starters for Fords. B. Oppenheim will be manager of the branch.

The Franklin Motor Car Co., Lexington, Ky., has been incorporated at $20,000 by William M. Phillips, B. F. Stone and Stanley Stone.

The Commercial Auto Body Building & Painting Co., Lexington, Ky., has incorporated at $1850, the incorporators being Waller R. Williams, F. A. Forsythe and J. D. Happer.

The Rex Garage, Lancaster, Ky., has been incorporated at $8,000 by W. D. Hammack, W. F. Champ, R. P. Gregory and Henry Moore.

The Polack Tire & Rubber Co. will give up its Philadelphia branch at 1906 Market Street. Maxwell Smollen, manager, will open an agency here to handle the tire.

William M. Stewart, Philadelphia, formerly of the automobile department of the Wanamaker store, has formed the Stewart Co., which will handle tires and the Pathfinder, at Sixteenth and Sansom Streets.

Philadelphia.—During 1916 more garages were erected in Philadelphia than any other year in the history of the business. Permits were issued by the Bureau of Building Inspection for the erection of over 850 garages, or more than two for every day of the year. The outlay for this work aggregated $1,307,340.

The L. S. Bowers Co., Philadelphia, agent for the Miller Rubber Company, has appointed Louis Glick sales manager.

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The Orla S. Wilson Co., 338 North Broad Street, Philadelphia, has appointed Thomas N. Prichard a manager of the retail department, selling the Saxon and Kissell. The company will move about March 1 to Broad and Wallace Streets.

The Deatrich-Bennett Automobile Co. of Wilkes-Barre, Pa., has been formed with a capital of $10,000. R. D. Bennett, of Wilkes-Barre is treasurer.

SOUTHWEST

J. A. Ramsey, F. H. Willmont and C. M. Ross, agency for the Detroiter at Kansas City, have moved from 1804 Grand to 1904 Grand.

The Liberty Motors Co., Kansas City, has appointed S. V. Williams, formerly with the Empire Auto Co. as salesman, as agent for the Liberty Car in Topeka, where a showroom will be opened.

The Overland branch at Kansas City is expecting to get into its new building by Feb. 15. The used car department is already installed in the new building.

The Busch-Morgan Motor Co., Kansas City, Mo., has added the Dort.

The Manning-Martin Motor Co., 1924 Grand Avenue, Kansas City, has been organized to distribute the Stevens and the Farm Auto Tractor. W. E. Manning was for seventeen years manager of the Kansas-Moline Plow Company at Kansas City, and G. H. Martin also distributed for the same company a number of years.

T. A. Harding, Garden City, Kan., has purchased the interest of Case Van Scholack in their garage.

Teater Bros., Blairtown, Mo., have purchased the Teater & Delap Garage. They handle supplies and accessories.

Arthur Dorsey, Fort Scott, Kan., traded his eighty-acre farm for the Crescent Garage, owned by Dudley Bishard. Mr. Bishard will retain the vulcanizing plant, in the same building.

C. W. Vaughn, Arkansas City, Kan., has purchased the interest of Thomas Roche in the Union Motor Co., distributer of the Velie and Chandler.

S. P. Schaefer, Baxter Springs, Kan., has opened the Jefferson Highway Garage.

R. C. Harris, Caldwell, Kan., repairman at the Clinesmith Garage, received a Christmas present of a half interest in the garage, which was purchased by his father, who made him a present of a half interest and placed him in charge.

The Newton Bros., Emporia, Kan., will build a two-story, 25 x 100 ft. addition to their garage. The entire garage will be remodeled with the building of the addition. When completed, the garage will have a floor space of 15,500 ft. The garage is situated on the Santa Fe trail.

O. G. Pirtle & Son., Wilsey, Kan., have purchased the garage and supply shop of R. B. Coffin.

The Harris Motor Co., Caldwell, Kan., succeeds the Troutman Bros. in the garage business.

Louis Lowe and Bere Lowe, Hutchinson, Kan., have purchased the Chevrolet agency of Burr Bros.

Edward Hessenflow and Clinton Brewer, De Sota, Kan., have purchased a garage at 404 East Eighteenth Street, Kansas City, Mo.

Don Miller, Atchison, Kan., has purchased the Hudson agency for Atchison of W. L. Bell.

A. N. Bull, Oakley, Kan., has purchased the Oakley Garage.

Gates & Tipton, Beloit, Kan., have opened a garage and will carry accessories and Ford parts.

O. C. Meckenstock, Enterprise, Kan., has taken the agency for the Ford.

Harry Kelly, Goodland, Kan., has taken the agency for the Dodge.

Charles Blackburn, Grainfield, Kan., has purchased the Ford Garage of Dr. Winslow.

Cap Miller, Sabetha, Kan., who has purchased the garage of Fletchall Bros., is making an addition to the garage.

Chas. Miller, Smith Center, Kan., purchased the Chamberlain Bros. Garage. He will increase the stock of accessories.

George Kelly, Goodland, Kan., will build a 50 x 100-ft. garage.

N. V. Wood, Topeka, Kan., manager of the Topeka Buick Co., will build a 50 x 75-ft. addition.

The Denmo Sales Co., 618 Walton Avenue, St. Louis, Mo., has opened a new garage, with steam heating and vacuum cleaning. A 24-hour service will be given.

John Combie, Miami, Okla., has opened a garage.

H. V. Hall, Guymon, Okla., has purchased the steam vulcanizing plant of George Rockwell.

C. C. Reese, Cheyenne Wells, Col., has purchased the Turner Garage and renamed it the Pretty Prairie Garage.

J. M. Morris, Enid, Okla., has leased a new building for the Ford Service Co.

The Texas Motor Co., Beaumont, Texas, has opened new salesrooms. E. R. Lindsay, formerly of the Neches Motor Co. of Beaumont, is the manager. The company is capitalized at $3,000.

H. E. Nelson, Cowgill, Mo., has sold the Cowgill Garage to Henry Strawhacker.

W. F. Heins, Kansas City, Mo., is building an addition to his Benton Garage, making a floor space of 20,000 sq. ft.

G. C. Phillips, Kansas City, is clearing ground for a garage at Locust and Ann Streets, with a floor space of about 13,500 ft.

Oscar Drake, Kansas City, has bought the Leonard-Drake Auto Co., and will operate it.

Arthur Souders, Gerald, Mo., will open a garage and repair shop.

The Gillham-Pierce Motor Car Co., St. Louis, will handle the Premier at 3107-3111 Locust Street.

E. W. Abrogast, St. Louis, recently with the Cole factory, has been made sales and advertising manager of the Park Automobile Co.

The Auto Sales Co., St. Louis, has been organized to sell Wasco garage heating system and Maxotires in that city. James H. Leiber is manager. The service station nas been opened at 908 Chestnut Street.

L. F. Buder, St. Louis, has been made manager of the used car department of the Newell Motor Car Co. This department is located downtown at Twelfth and Locust Streets.

The Gary Motor Truck Sales Co., St. Louis, has been organized to sell Gary trucks. R. D. Blum is manager of the salesrooms at 908 Chestnut Street.

W. Milton Koenig, St. Louis, has been made advertising manager for the Weber Implement and Automobile Co., selling the Hupmobile, Maxwell and Grant.

The Standard Supply & Service Co., St. Louis, has been organized to handle the Standard tire and conduct a service station and repair shop at 4156 Olive Street. George C. Huth is president.

Julian L. Nugent, St. Louis, president of the Trenton Motor Car Co., National and Regal distributer, has become manager of the company. North Moore, who is thus relieved as manager, has joined the Cadillac. Vernon L. Hanscom, Regal sales manager, goes to the Tate-Gilham Motor Car Co.

The Battery Service Co., St. Louis, Willard Battery distributer, has acquired a vacant lot next to the service station at Locust and Twenty-third Streets, for use in parking cars left there for service.

John C. Clardy, St. Louis, recently manager of the used car department of the De Luxe Automobile Co., has joined the staff of the Dorris Motor Car Co.

The Used Car Mart, St. Louis, has been organized by Roy C. Solomon, recently in charge of the used car department of the Park Automobile Co. The salesrooms and shop are in a building recently vacated by the Detroit Electric Car Co. of Missouri, at Twentieth and Locust Streets.

The Anchor Auto Co., St. Louis, has been organized to sell the Commerce truck. J. B. Felkel is manager, and salesrooms are at 4274-4276 Easton Avenue.

The McQuay-Norris Mfg. Co. has added three mechanical engineers to its sales force in the field, namely, Messrs. H. C. Coleman, Carl E. Finch and H. R. Souther.

Clint Nickolson, Penokee, Kan., has built a new garage.

The Eckert Garage, Hardtner, Kan., has opened for business.

Barton Blakeslee and Guy I. Walt, Independence, Kan., have leased a new garage at Oswego, Kan., and will establish an agency.

Jesse Smith, Smith Center, Kan., has bought the Scott Garage on South Kansas Avenue.

John Rebbeke, Linn, Kan., has built a garage.

The Essex Motor Co., Douglas, Kan., has completed its new Ford garage, 40 x 100, and opened for business.

The Vinci Auto Co., Independence, Kan., is erecting a new garage at Maple Street and Penn Avenue.

Gates & Tipton, Beloit, Kan., have opened a garage on West Main Street.

Jess Venard, Barnard, Kan., has bought the Patrick Garage from Frank Patrick.

H. E. Ingersoll, Altoona, Kan., has sold his interest in the Brick Garage to Frank Dean and Arthur Whightsil.

Maple & Roberts, Wichita, Kan., are building a two-story garage of brick and concrete, 50 x 135, for George Lekron, Kansas City.

The Hutchinson Auto Co., Winfield, Kan., has built an addition, 50 x 140, to its garage on South Main Street.

J. C. Stoop, Garden City, Kan., has sold the Santa Fe Trail Garage to Robert Horton.

L. S. Tinder and Lee Larabee, Hutchinson, Kan., have entered a partnership and opened a garage at Liberal, Kan.

Harry Whitteberry, St. John, Kan., has sold his interest in the Travelers' Aid Garage, and has taken the office of superintendent of the Northrop Motor Co., Syracuse, Kan.

Clyde Harper, El Dorado, Kan., has opened a repair shop.

The U. S. Vulcanizer Co., El Dorado, Kan., has been opened as a branch of the San Francisco house.

L. Abrahams and J. A. Beagles, Downs, Kan., have formed partnership and will conduct a repair shop, service station and tire store.

Lester Gannon, Blue Mound, Kan., has built a garage.

The Oster & Merton Garage, Kinsley, Kan., has been sold to William Lancaster and Everett Bittner.

A. L. Harding, Lakin, Kan., has bought a half interest in the repair shop of Case Van Schoiack, on Eighth Street, Garden City, Kan.

Charles Crosen, Clyde, Kan., has sold his interest in the Crosen & Carson vulcanizing works to Harry Hartzel.

Chris Olson, Kiowa, Kan., and **N. B. Blumberg**, formerly manager for Benton & Ives at Hardtner, Kan., have formed the Olson-Blumberg Motor Co., with quarters in the building recently vacated by Benton & Ives at Kiowa, Kan. They will handle the Velie and accessories.

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Here Are More
ACCESSORIES

(*Continued from Page* 32)

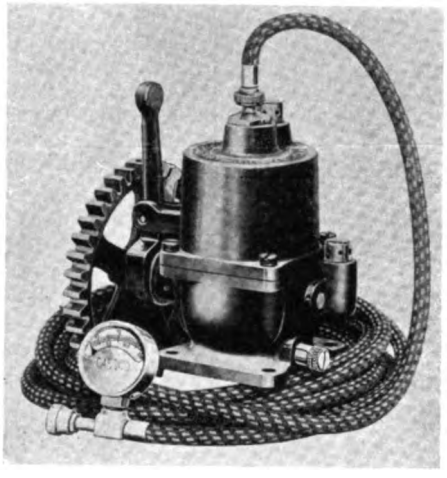
Tire Pumps

Crane Oilproof

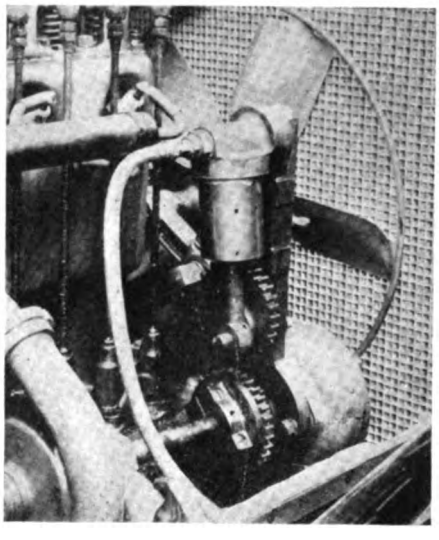
A single-cylinder, engine-driven tire pump, particularly designed to prevent the pumping of lubricating oil into the tires. This is done by means of a special alloy packing ring, placed at the bottom of the piston, scraping back and preventing the passage of oil past the piston. Both cylinder and piston are pressed steel, the cylinder being threaded and screwed over the base so as to clamp the packing ring and force it against the piston and the base, making leaks impossible. The cylinder can be screwed down to increase the pressure between the packing ring and the piston, but cannot be loosened. The pump is so constructed that it may be installed by the owner in his own garage, as in practically every case it may be bolted onto bolts and studs already on the engine. As split gears, bored to the correct size, are used, tearing down the engine is avoided. All parts and fittings are supplied ready for attachment, including hose and gage. The price, $8.—Bay State Pump Co., 100 Purchase St., Boston.

Cassco

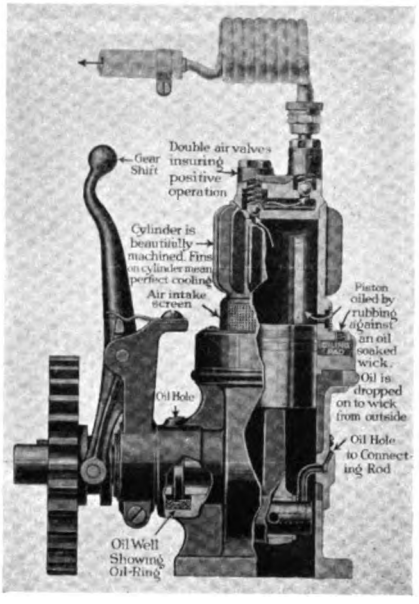
This engine-driven tire pump is compact, and is gear driven from the motor. An aluminum-alloy piston, 2½ in. in diameter is driven by an eccentric through a 1-in. stroke, has two spring-steel rings, and works in a heat-treated cast-iron cylinder. Both intake and exhaust valves are of the poppet type. Special brackets and fittings are supplied, and the pump may be installed by any



The Cassco pump is light and compact



The Juleco pump is readily installed



Section showing the careful construction of the Stewart pump

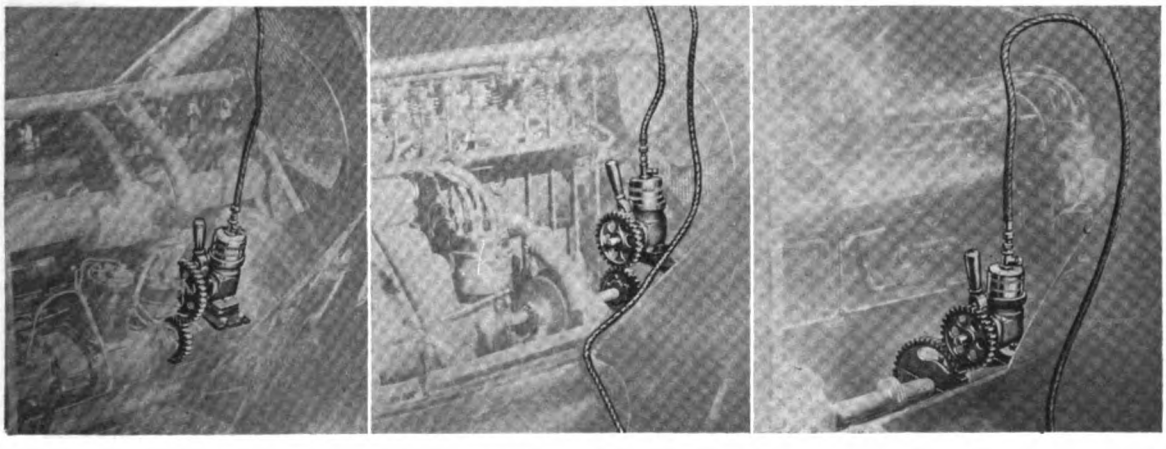
one without any machine work. This pump will inflate a 34 x 4-in. tire in 1½ minutes, it is said. The price, complete with all fittings, is $10.—Edward A. Cassidy Co., Madison Avenue and Fortieth Street, New York.

Detroit Gearless

This pump is direct-driven from the front end of the engine crankshaft. It is attached in the same manner as the starting crank, and held in position by a thumb screw and clamp. The construction throughout is similar to that used in the automobile engine, having accurately finished metal pistons and rings, and the standard automobile inlet valve. Each pump is tested, and must fill a 1000-cu. in. tank to 70 lb. in 4 min. It may be attached or removed in 30 sec., and is for the Dodge, Reo, Saxon Six, Hudson Super Six, Overland and many other popular-priced cars. The price is $10 complete with gage and tube.—Detroit Accessories Corp., 519 Hillger Ave., Detroit.

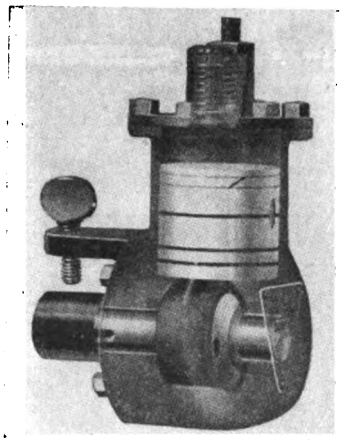
Stewart

Mounted directly on the engine, a single throw of the lever places this pump



Three typical installations of the Crane oilproof pump. Note the special brackets used in making the attachment, and the split gear drive

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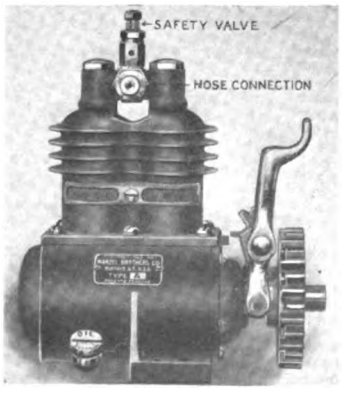


The Detroit Gearless is driven from the crankshaft

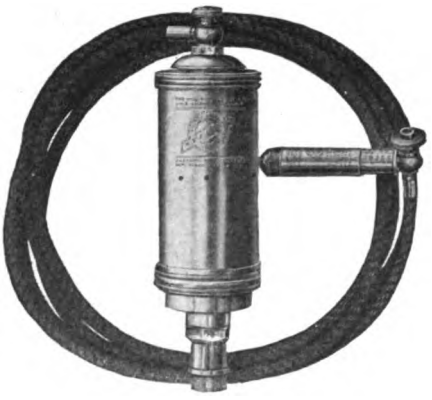
in operation. A crank, driven from the engine through a gear, operates a piston, the piston having 5 rings and working in an air-cooled cast-iron cylinder. The intake takes place when the piston reaches the lowest part of the stroke, as there it uncovers the intake port. Two exhaust valves of the spring-operated ball type insure positive operation. It is furnished complete with brackets and gears, air-pressure gage and 15 ft. of hose. Price, $16.—Stewart-Warner Speedometer Corporation, 1826 Diversey Boulevard, Chicago.

Juleco

The feature of this engine-driven tire pump is that it may be installed in 15 or 20 min., with only a screwdriver and wrench, and requires no alteration to the engine. The drive and method of attachment varies with the different cars, in general it being driven through gears, either from the front of the crankshaft, as in the Ford, or from the pump shaft in the Buick. In every case, the cylinder is carried on an upright frame bolted to the engine, and is open at the lower end, the crank and connecting rod being exposed. Because of this open-crankcase feature, the possibility of oil pumping into the pump cylinder is decreased. The price for the Ford and Maxwell is $6, for the Dodge, Buick and Overland, $8.



The 2-cylinder Manzel pump is a miniature of the gasoline engine

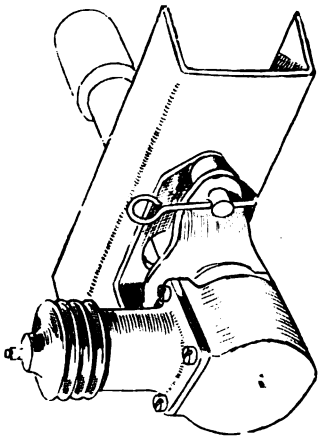


The Utility is a spark plug type pump

—Judd & Leland Mfg. Co., Clifton Springs, N. Y.

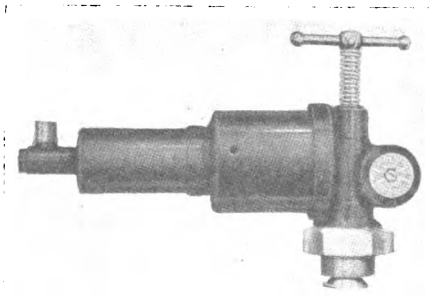
Kellogg

Several models of engine-driven tire pumps are made, the model 101 being designed for installation in most of the popular-priced cars with little machine work

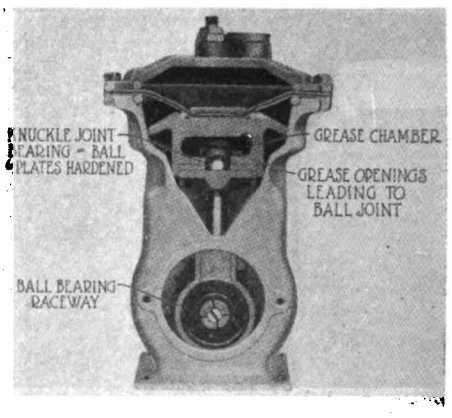


A new Kellogg crankshaft drive pump for the Overland, Dodge and Chandler

or fitting of any nature. This pump is of all-metal construction throughout, having babbitt-lined bearings, drop-forged crankshaft, and the pistons are designed to prevent oil pumping. This pump sells for $15 complete with fittings, air gage and hose. New crankshaft drive pumps have been brought out for the 1916 and 1917 Overland, 1917 Dodge and Chandler cars. This pump is attached to the motor in the same manner as the starting crank, being held in place by a pin when in use, and readily packed in the tool box when not in use. The poppet intake valve is in the piston of the pump, to remove from it the possibility of injury when being carried in the tool box. No oil or grease is carried in the base, the pump being lubricated by oil-soaked felt packing. The price is $10 complete.—Kellogg Mfg. Co., Rochester, N. Y.



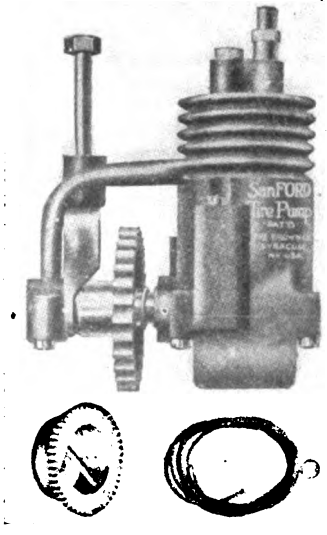
The Mayo spark plug pump is permanently attached to the engine



The Simplex Diaphragm pump. Note method of attaching diaphragm to piston and cylinder

Manzel

Manzel engine-driven tire pumps are built in three models, 2-cylinder, single-cylinder standard model and the Ford special. The 2-cylinder model is built like an engine, with cast-iron cylinders, pistons and piston rings, bronze connecting rods and bearings and drop-forged steel crankshaft. Each pump is fitted with a blow-off valve that may be set at any desired pressure, and when that pressure is reached the air is by-passed into the atmosphere. This pump is fitted with brackets and gears for over 250 car models, and sells for $18 complete. The single-cylinder standard model is constructed practically the same. Price, complete with gears, brackets, hose and gage, $15. The Ford special, ready for



The SanFord pump is designed for the Ford, and is readily installed

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attachment, $7.50.—Manzel Bros. Co., 309-319 Babcock St., Buffalo.

SanFord

A single-cylinder air-cooled engine-driven tire pump for the Ford. It may be attached by any one, with no machine work or drilling, and becomes a permanent fixture. The cylinders and piston are cast iron, bore 1½ in. and stroke 1 in., and is said to inflate a tire in 1 min. Price, complete with all parts for attachment, including hose and gage, $8.50. In addition, the Brown Impulse, and Brown Junior Impulse tire pumps, selling for $12 and $5.50 respectively, are continued. These pumps are attached to the cylinder in place of a spark plug, and are actuated by the suction and compression in the cylinder when the motor is running.—The Brown Co., Syracuse, N. Y.

Utility

The Utility spark plug pump is attached by removing a spark plug and screwing the pump in its place. A feature of this pump is the automatic gage, that is set at the desired pressure and bypasses the air to the atmosphere when that pressure is reached, causing a whistle that warns the operator to stop the pumping. Two sizes are made, the smaller for tires up to 3 in., selling for $6, a larger one for tires up to 6 in., selling for $10.—The Hill Pump Valve Co., Archer Avenue, Canal and Twenty-third Streets, Chicago.

Roll-On

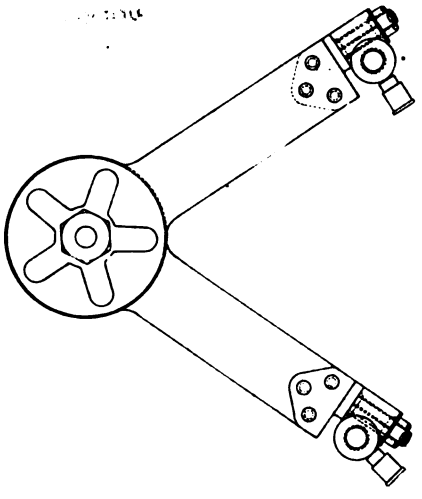
This pump is driven through the rear wheel of the car, which rests on rollers on the pump. This pump is said to inflate the largest tire in less than 2 minutes' time. Three rollers are mounted on a metal base, two being used to drive the pistons of the pump, the third being only an idler spool that holds the car wheel on to the driving rollers. Each cylinder of the pump is 1½ in. in diameter, and has a 1⅝-in. stroke; the intake valves are of the poppet type, ground to a perfect fit; the exhaust valves being steel ball checks, spring actuated. The price, complete with hose and gage, is $15.—The V Air Valve & Mfg. Co., Tremont Street, Denver.

Simplex Diaphragm

The pumping chamber and the cylinder in which the plunger operates are separated by means of a diaphragm, in this pump, removing the possibility of oil or grease being mixed with the air. This construction also permits the plunger and connecting-rod bearings to be well lubricated and packed in grease, so that little attention is required for the care of the pump. The valves are of ball design. Price, including sliding gear, hose and gage, $12.50.—Chicago Tire Pump Co., 14 East Jackson Boulevard, Chicago.

Mayo Valve Cap Pump

Permanently attached to a valve cap of the engine, this valve cap tire pump is thrown into operation by pressing down and locking a handle. The pump proper consists of a piston housed in a cylinder, the piston being actuated by the suction and compression in the cylinder of the engine to which the pump is attached. The outfit includes hose and gage, and may be installed in less than an hour's time. The price, $10.—Mayo-Skinner Mfg. Co., 2115 Elston Avenue, Chicago.



The Hartford shock absorber now has an improved universal mounting

Shock Absorbers

Hartford

The mounting has been improved so that the shock absorber is more efficient and will wear longer. Formerly the two arms were bolted rigidly to axle and frame, but in the new design there is a universal action at these two points obtained by the special construction illustrated. The joints are designed so that they will not become loose and rattle. It is standard equipment on such cars as the Pierce, Marmon, Stutz and McFarlan.

In addition all the regular models will be continued from last year. These include heavy car type, 3 degree automatic, for cars over 4000 lbs., per set of four, $60; heavy car special, same price; average car type, Regular Standard, for cars up to 3000 lbs., $50; medium car type, Intermediate, for cars over 2000 lbs., $40; light car type Junior, for cars up to 2000 lbs., $30; special shock absorbers for Fords, one front and two rear, complete with fittings, $22.50.—Edward V. Hartford, 172 Morgan Street, Jersey City, N. J.

Houdaille

A hydraulic type of shock absorber, the main member of which is fastened to the frame and connection to the axle is through a valve crank and rod. There is a rotating piston with wings compressing castor oil and forcing it through passages in conduits arranged for this purpose. The principal features are a simple turn of the screwdriver adjusts it to the weight of the car. The action of the castor oil as lubricant, preventing rust and keeping dirt out. The price per set of four, $90; two, $50.—Houdaille Shock Absorber Co., 245 W. 55th St., New York.

Walker

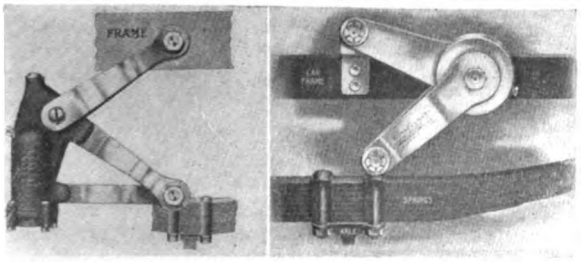
A supplementary spring fully inclosed and with flat coil spring of tempered alloy steel. The shacklebolts are furnished with grease cups. Price, per pair, $15. Fordezer shock absorbers are supplementary spring type; all parts are dropped forged, bearings are bronze bushed and grease is held in felt washers. All parts are machined to fit, and a dustproof cap insures lubrication. Springs are flat vanadium steel. Price $7. Walker single cam lever springs consist of a coiled spring attached to a long lever arm which is pivoted to the axle and the spring shackle. Price, per set of four, $5.50. Double cantilever springs in which two coiled springs are employed instead of one, sell for $8 per set of four.—Walker Mfg. Co., Racine, Wis.

Ridewell

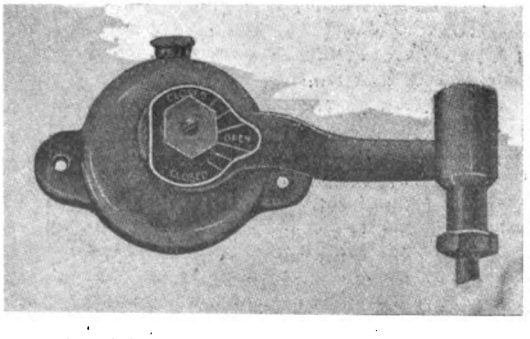
Supplementary springs for Fords consisting of a fully inclosed double coil spring which is attached between the spring shackle and the axle. Complete set of four, $10; pair for front or rear, $5.—Humboldt Machine & Stamping Co., Long Island City, N. Y.

Flentje

Air and oil is used as the absorbing medium in this device which is attached to the axle and frame member. There are three models. For cars up to 2500 lb., for large touring cars and special



Left—The Landis Diffuser combines both air and oil to soften the shock. Right—The Connecticut shock absorber is of the scissors type



The Houdaille Absorber comprises a piston acting on castor oil

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The Ridewell supplementary spring, for the Ford

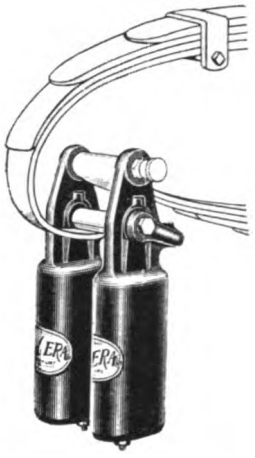
size for fire apparatus and trucks. The hydraulic cylinder and piston principle is employed. The cylinder contains oil which is permitted to pass through small holes in the piston, these holes being controlled by an automatic valve. Part of the space in the cylinder is filled with air to permit a certain amount of movement regardless of the passage of oil through the piston. A control valve is adjustable by a rod extending upward through the whole piston rod. This adjustment is made to suit the weight of the car. The piston rod is case hardened and the valve seat plate is of copper resting on a sheet of spring bronze. The stuffing box through which the piston rod passes is double packed.—Ernst Flentje, Cambridge, Mass.

Connecticut

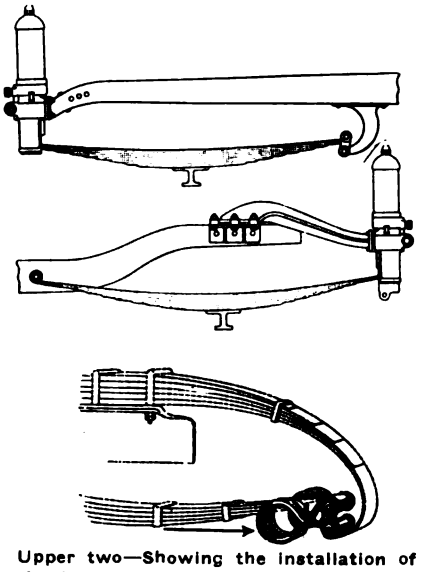
These are of the scissors type, and resistance is due to the action of a three-faced cam mounted on one arm between three steel springs. Relative movement of the arms causes the cam to expand the springs, and this action dampens the shock. An outside adjustment permits adjustment to the weight of the car. Springs and cams are packed in graphite grease. Price, with fittings, per set of four, $50; without fittings, $40; per pair with fittings, $25; without fittings, $20; corresponding prices on the light model are $30, $22, $15 and $11.—Connecticut Shock Absorber Co., Meriden, Conn.

Westinghouse

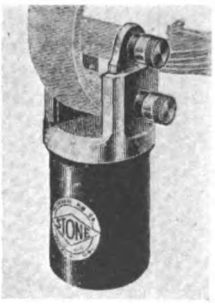
The Westinghouse air spring is a pneumatic device with a telescoping cylinder mounted between spring and spring horn. It is roughly cylindrical in shape and more than a foot long, and the outer section is carried on the frame bracket and the lower is pivoted to the spring, the whole taking the place of the shackle. The chamber is partly filled with oil, which not only acts as a lubricant but also seals the telescoping joint, the filling plug at the top permits replenishment of the oil supply, and there is also an air valve by means of which the chamber may be filled with air at any desired pressure. The small interior oil pump is operated automatically by the up-and-down movement of the absorber, returning to the chamber the small quantity of oil which works past the packing. The by-pass valve is restricted in its action by an oil governing device, preventing rebound. When applying Westinghouse air springs to the rear of a car with three-quarter elliptic springs, the quarter elliptics are replaced by a bracket carrying the air spring. Price $250.—Westinghouse Air Spring Co., New Haven, Conn.



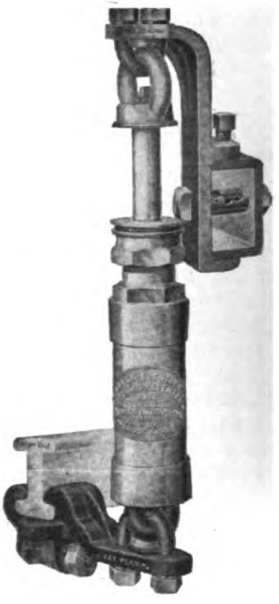
The New Era replaces the spring shackles, and is of the twin type



Upper two—Showing the installation of the Westinghouse air spring. Lower—The Twin Spring increases the acting length of the springs



The Stone shock absorber is compact, flexible and adjustable



The Flentje absorber employs both air and oil to diffuse the shock

New Era

This device replaces the spring shackle and is a twin type, there being one unit each side of the spring. There are four different sizes, No. 1, $12 up to 2300 lb.; No. 2, $12.50, 2300 to 3000 lb.; No. 3, $13.50, 3000 to 3800; No. 4, $15, 3800 lb. and up. A special type known as the New Era 1917 model is made for Fords and is sold with a 30-day trial to dealers.—New Era Spring & Specialty Co., 864 Woodward Ave., Detroit.

Stone

There are two double coil springs in a single cylindrical case, a play of 2 in. is afforded which is said to be sufficient for absorbing all ordinary small shocks. There is an adjustment which permits a variation in load of 1500 lb. and which also compensates for varying road conditions. This feature enables one model of shock absorber to be fitted satisfactorily to many makes of cars. The attachment is simple, as it is merely a question of replacing the spring bolts. Price $12 per pair.—Universal Rim Co., 1502 Michigan Ave., Chicago.

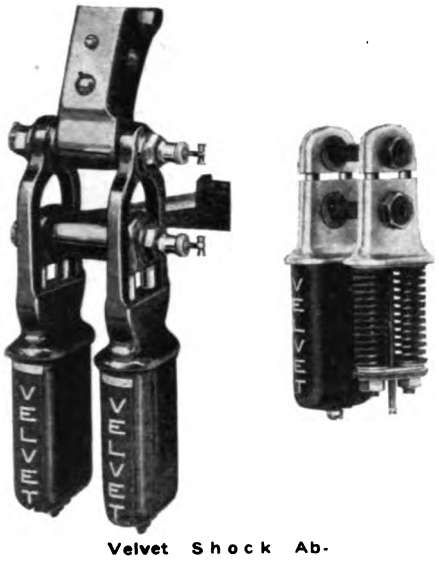
W & C

These are designed exclusively for Fords, and consist of two rather long, curved arms, one for each end of the leaf spring. The arm is pivoted in place of the shackle and attached to its end is a long coil spring which is anchored to the frame adjacent to the starting crank.—Philip H. Webber & Co., Hoopston, Ill.

Landis

Both oil and air are used in this device, which is known as a shock diffuser. It is made in only one model because a variable resistance is offered in proportion to the spring recoil. The new shock absorbers are more attractive and have been changed to give a more perfect action. One arm of the shock absorber is

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Velvet Shock Absorber — Right — Note the small coiled springs. Left — The absorber installed

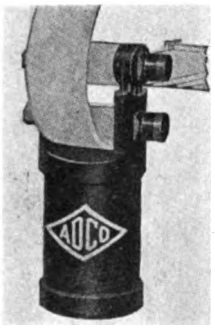
attached to the frame and the other to the spring. The action of the upper arm moves the piston up and down. The first action is pneumatic, the air under the piston being compressed thus arresting its movement gradually. Further movement causes the piston to act against the oil, forcing it out through the cylinder head.—Landis Engineering & Mfg. Co., Waynesboro, Pa.

J-M

This device is designed for replacing the spring shackles. The standard type consists of two sheet-steel cylinders, side by side, mounted underneath the car spring. There is a single spring in each cylinder. The Model Z sells for $30, $42 and $50, depending on the size of the car. The Model C is a single-tube type, which may be used where the other type is not applicable. Price $42 and $50.



The Johnson supplementary spring takes the place of the shackle and contains a light and a heavy coiled spring

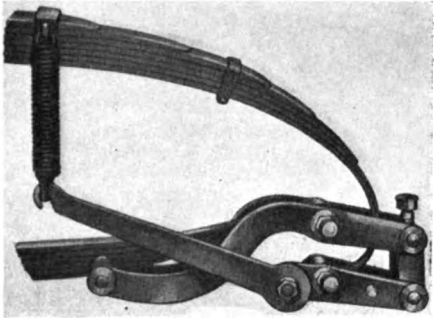


The Adco is fully enclosed and compact

Model F3 is for Fords. Price $8 per pair for rear and $15 per set of four.—J-M Shock Arbsorber Co., 250 W. 54th St., New York.

Hup

This device is designed exclusively for Hupmobile 32 models. A special design is required because this model has a transverse spring which is shackled at each end by a ball-joint construction.



The Halladay Flexlevers materially increase the acting length of the springs

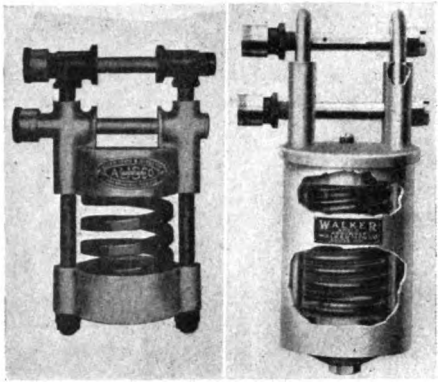
The shock absorber includes the arm at each end which carried the spring. Price $10.—Miller & McLean, 100 Liberty St., New York.

Velvet

A feature of this design is the use of eight small coiled springs. Each unit is dual, and consists of two sets of coiled springs. There are three models, the Model C is made of phospher bronze, nickel plated; Model E is all black and made of malleable iron and F is all black and is made for the new type of half-elliptic springs such as used on the Hudson, Hupmobile, Chandler, Haynes and others. The Model F is a new one, in which the sliding motion is in exactly the opposite direction than the motion used on three-quarter elliptic springs.—John W. Blackledge Mfg. Co., 349 E. Ohio St., Chicago.

Alisco

A single supplementary spring design in which the spring is open. It is designed to add 70 in. to the riding springs of the car, and can absorb over 6000



Left—The Alisco contains a single supplementary spring. Right — The Walker absorber is fully enclosed

vibrations per minute, it is said, as compared with about 600 for an ordinary flat spring. Price $22 and $25.—Allen Iron & Steel Co., 1790 Broadway, New York.

J. H. S.

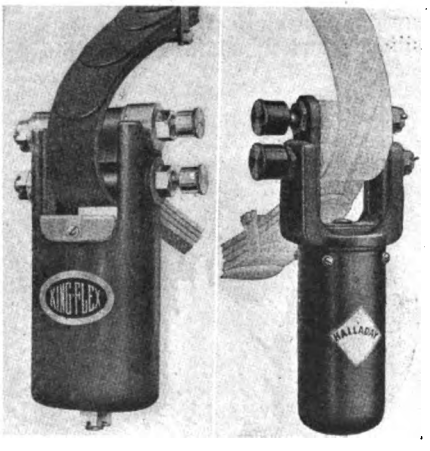
There are four styles, J. H. S. and Sager-Twin for all cars not equipped with cantilever springs, equilizer springs, including those with cantilevers, and J. H. S. for Ford models. The J. H. S. consists of two cylindrical members placed each side of the car spring and taking the place of the shackle. The Sager-Twin is a similar design and the equalizing spring applicable to all cars is simply a coil spring which may be attached between the car spring and the frame.—J. H. Sager Co., Rochester, N. Y.

Halladay Flexlevers

These supplementary spring shock absorbers are of the lever type, there being a lever at each end of the Ford spring which takes the place of the spring shackle and which has an arm about a foot long to which is attached a coil spring. Price, per pair, $6; set of four, $10.—L. P. Halladay Co., Streator, Ill.

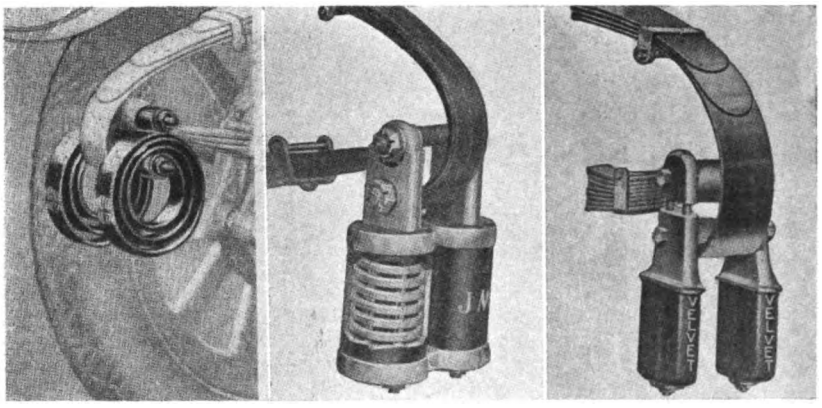
Adco

This is a single supplementary spring for which many advantages are claimed. The top is fully inclosed, the slide bars being corrugated to give increased wear



Two supplementary springs. Left—The King-Flex. Right—The Halladay

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Three supplementary springs of the three-quarter elliptic type. Left—The Temco-Alta Universal. Middle—The J.M. Right—The Velvet

and prevent rattling of parts and to make them dirt and rust proof. There are two coil springs, the outer one carrying a light load and the inner load being for heavier shocks. Adjustment is obtained by an elliptical nut which cannot become loose. The shock absorber works in grease. Price $20 per pair.—Auto Device Mfg. Co., 62 Mason St., Milwaukee.

K-W Road Smoothers

This is a coiled-spring device with an added feature in the shape of an anti-rebound air chamber to cushion the rebound, anti-side motion links prevent side rocking and swaying. Price $9 per pair for rear only; $15 per set of four.—K-W Ignition Co., Cleveland, O.

Johnson

A supplementary spring mounted in a single cylindrical case. The inner coil takes the small jars, and when it is fully compressed additional shocks are carried by the heavier, outer coil spring. They may be installed in 20 min., it is said. Price, Junior, type, for cars less than 2200 lb., $16; up to 3500 lb., $22.50; over 3500 lb., $30; truck types, $40. The improvements over 1916 include a stamped steel stirrup or hanger, and the use of four steel truss rods of 7/16-in. cold-rolled steel for holding the shock absorber together.—Triple Action Spring Co., 55 E. 28th St., Chicago.

King-Flex

A single type of supplementary spring shock absorber with two conical coiled springs designed to give maximum resiliency and in addition there is an air cushion to reduce the rebound. There is an adjustment at the bottom to adapt it to different sizes of cars.—Vehicle Specialty Co., 36 State St., Hartford, Conn.

Campbell

This device consists of a coil spring, which is fastened to the frame and from the lower end of which there is a strap which passes around the axle, thus, the spring acts on the rebound and reduces the movement. It is not necessary to drill any holes. Price $5.—Perkins-Campbell Co., Cincinnati.

Temco

The Temco-Alta universal shock absorber is for attachment to cars having three-quarter elliptic rear springs. It is a unique design in that the springs are flat and are coiled the same as a watch spring, the inner and outer ends attaching to the spring bolts and taking the place of the shackle. Price, $12 per pair. A more conventional design is manufactured for the Ford. It has double concentric coil springs and is fully inclosed and proof against dust. Price, $10 per set of four.—Temco Electric Motor Co., Leipsic, O.

Twin Springs

This is a simple type of auxiliary spring, consisting of a triple coil of heavy bar stock, the end attaching to the spring bolts so that a pair of these springs take the place of clips. Price $10 per pair. A full set for Fords, $15.—Twin Spring Co., 1000 Boylston St., Boston.

Battery Gages

Monarch

The storage battery tester is a compact instrument operating on the solenoid principle which may be carried in the pocket. It is voltmeter, but instead of having a voltage scale it reads Full, Medium and Low. The device is cylindrical and out of one end extends a rod with a scale on it. The position of this rod indicates whether the battery is full or not. Price, $1.50.—Benford Mfg. Co., Mount Vernon, N. Y.

Gray & Davis

The instruments are made either as a flush or a dash type and are finished in nickel or black enamel. The ammeter is usually finished with a 15-0-15 range and has a balanced, dead-beat needle. It is made in sizes varying from 2 to 3 in. and sells for $3.50 up. Voltmeters are made separate but are sometimes combined in the same setting.—Gray & Davis, Boston, Mass.

Ever Ready

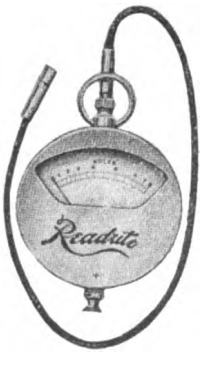
Pocket meters are manufactured for measuring current or voltage. The instruments are dead beat, the pointer coming to an instant stop without wavering, cases are made of brass, heavily nickel plated and polished. The dials are of etched metal, with figures in black and background dull silver. Each meter is supplied with a detachable 10-in. flexible lead. Readings may be taken irrespective of battery terminals, the pointer giving proper scale deflections regardless of whether the meter terminal is placed on the positive or negative line. They are 2 in. in diameter and are made in the following types: Ammeter, 0-35 amps.; voltammeter, 0-35 amps., 0-11 volts; voltmeter, 0-10 volts; coil tester, 0.-1.5 amps.; coil tester and ammeter, 0-1.5 amps. and 0-30 amps. Meters for cowl installation are also manufactured but information on these is not available at the present time.—American Ever Ready Works, Long Island City.

Hoyt

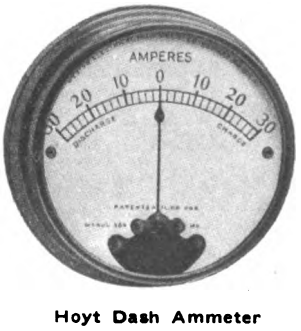
There is a complete line of voltmeters and ammeters including pocket types portable meters, switchboard and cowl



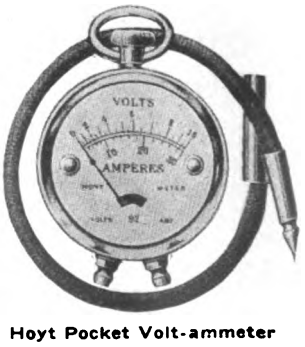
Weston Dash Ammeter



Readrite Pocket Voltmeter



Hoyt Dash Ammeter



Hoyt Pocket Volt-ammeter

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meters. The Utility pocket instrument has 0-30 range as an ammeter; 0-10 range as a voltmeter and when the two instruments are combined the voltmeter range is 0-15 and the ammeter range 0-30. The pocket multimeter comprises a separate voltmeter and an ammeter in a single cylindrical case and is particularly suitable for service station work. It has a double face one side registering up to 40 volts and the other side up to 4 amperes. The type 445 voltmeter and ammeter is a larger portable instrument with a hardwood base and there is a wide variation of scales to suit all needs, the prices ranging accordingly from $10 to $20. The type 175 current indicator is designed for cowl installations and registers 30 ampers charge or discharge. Scales of 10, 15 or 20 amperes may also be obtained. Price $3. The type 222 voltammeter is two separate meters mounted side by side in one metal casing and is designed for semi-flush mounting. Price ranges from $9 to $10. An interesting instrument is the Hoyt magneto mometer designed for running down ignition troubles on Fords. In addition to having an amperage scale there are four points which are lettered to indicate how well the magneto is operating. Price, $5.—Hoyt Electrical Instrument Works, Penacook, N. H.

Readrite

Pocket, switchboard and dash meters are made. The pocket style is 2 in. in diameter and is made for testing dry cells, storage batteries and general testing. For dry cells it is a 0-30 ammeter and sells for $1; for testing storage batteries a voltmeter is used, being provided with any of several ranges of voltages up to 25 and the usual price is $1.25. The voltammeter has 0-30 amperage scale and various voltage scales running from 3-15. Price $1.50. An ammeter for flush mounting and with a scale reading both charge and discharge up to 20 amperes, sells for $3.50. Other ammeter or voltmeter scales may be supplied, if desired. —Readrite Meter Works, Bluffton, O.

Campbell

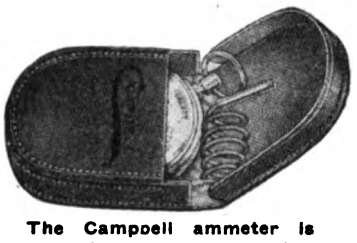
Ammeters with strong leather cases are made. The case protects it against injury or breakage of the instrument. An ammeter for dry cells complete with case lists at $1.75; the voltmeter for storage batteries $1.85 and the case alone is 50 cents.—Perkins-Campbell Co., Cincinnati.

Roller-Smith

Portable voltammeter, testing set for lighting and starting work is made for $47. The voltmeter and ammeter are mounted in a substantial wooden case together with the necessary shunts and resistances. Three voltage scales are provided 0-3, for testing individual cells; 0-15 for testing three cell systems; and 0-30, for six, nine or twelve cells. The two amperage scales ranging from 10-0-35 amperes and 10-0-350 amperes, covers all values encountered in starting, lighting and charging.—Roller-Smith Co., 203 Broadway, New York.



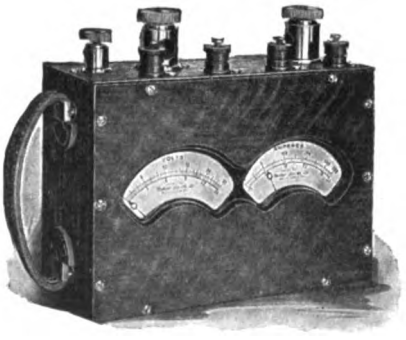
The Monarch Pocket Meter is compact, and easily used



The Campbell ammeter is carried in a strong leather case



One of the many Ever Ready pocket meters



A special Roller-Smith voltammeter set for the garage. It is designed for lighting and starting testing, and sells for $47

Weston

Ammeters and voltmeters for all automobile uses are built. The line includes flush type instruments of 30-0-30 amperage also 10-0-10, 15-0-15, and 20-0-20. The first mentioned is sufficient to take care of the largest lighting system on the market. The action of the pointer is extremely quick and responsive and at the same time is dead heat. Price $4.25. Voltmeters for flush mounting have ranges of 0-10 and other models may be had ranging from 1 to 50 volts.—Weston Electrical Instrument Co., Newark, N. J.

Muffler Cut-Outs

Apco

A steel strap clamp gripping the exhaust pipe carries a pivoted lever on one end of which is a shield shaped to the contour of the exhaust pipe. The other end is attached to the operating cable. The shield covers a hole sawed in the exhaust pipe and ordinarily it is held in place by a spring. Price 45 cents.—Auto Parts Co., Providence, R. I.

C & E

This cut-out valve clamps around the exhaust pipe and discharges into the atmosphere at right angles, and is made of iron with a solid back and has a 2-in. exhaust opening. A butterfly valve is electrically welded to the stem. The joints are machine ground and fit perfectly. The finish is hard baked black enamel. It is made in all sizes to fit all cars. Locking pedals which may be used with the cut-outs are made in three different styles.—The Fulton Co., Milwaukee.

Barco

The cut-outs are made for Ford, Maxwell, Dodge and Studebaker cars and a cut-out is opened by a butterfly damper which discharges to the atmosphere at right angles to the exhaust pipe. The Ford outfit is made of pressed steel with a pressed steel valve and the others are malleable iron. The equipment includes locking pedal, pulleys, cable and springs. —Barco Brass & Joint Co., 220 W. Illinois St., Chicago.

Gemco

Model H is clamped around a hole cut in the exhaust pipe. It has a solid back and the cut-out valve is placed in a T opening. It is a butterfly type. It is made for various diameters of pipes and there are special models for Ford, Dodge, Maxwell, Studebaker and Chevrolet.—Gemco Mfg. Co., Milwaukee.

R. L. H.

The opening to the atmosphere is placed at an angle of 45 deg. and is closed by a mushroom type valve which is hinged to a lever or pedal controlled from the driv-

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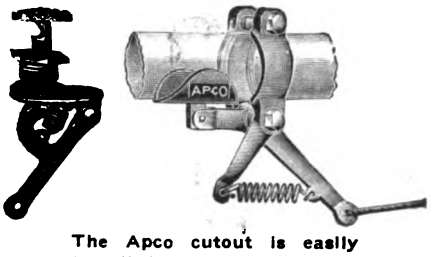
er's seat. The casting is of vanadium gray iron, the valve shaft is Cramps cold rolled steel and is therefore non-corrosive and the valve shaft spring is of flat Swiss steel and is copper plated. The cut-out is guaranteed against, leakage, corrosion, chatter or rattle.—Motor Car Devices Co., 845 Broad St., Newark, N. J.

G-P Cut-Out

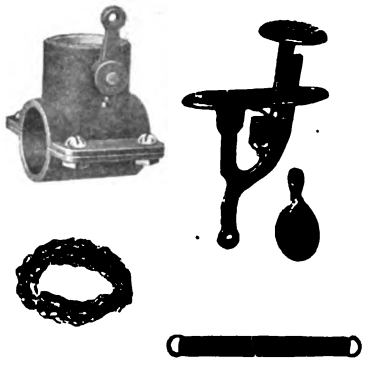
This cut-out has a right angle opening to the atmosphere and the movement of the exhaust gas is controlled by a flat valve which stands across the passage to the muffler at an angle of about 45 deg. thus deflecting the passage of the gas into the atmosphere. To attach, it is necessary to saw a section out of the exhaust pipe, the ends of the pipe fitting snugly into the cut-out casting and being held by set screws which insure rigidity. A special model is made for the twin six Packard and is designed to cut both pipes out simultaneously. The price of this model is $7 other models $4.50 to $5.50. The complete Ford outfit including pedal and chain is $4.50.—Edward A. Cassidy, Co., 30 East 40th St., New York.

Stryker

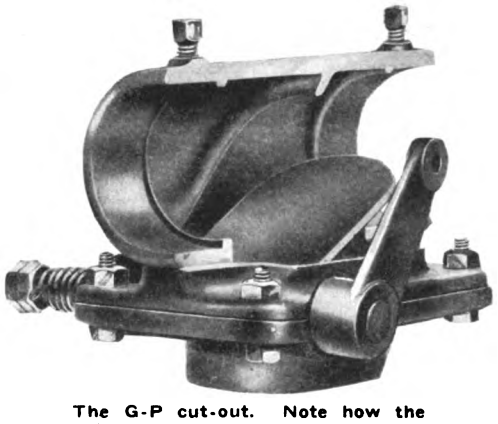
A brass cut-out which is clamped over a notch cut in the exhaust pipe and in which the gas is controlled by a butterfly damper. The equipment includes a pedal. Price, complete $4.25 to $8. Cut-out alone, $2.25 to $6.—C. W. Stryker, 131 E. Water St., Syracuse, N. Y.



The Apco cutout is easily installed, and sells for 45 cents



A Barco cutout installation. Cut-outs are made for the Dodge, Studebaker, Maxwell and Ford



The G-P cut-out. Note how the valve deflects the exhaust when open

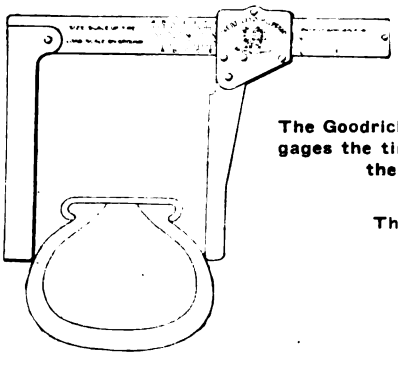
Tire Gages

Mayo

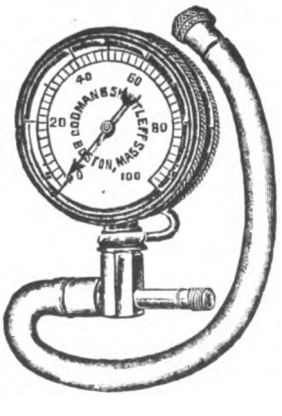
The No. 1 regular pump gage has a 1½-in. face and registers up to 150 lbs. The connection is at the bottom. Price, $1. A power tire pump gage has a T connection so that it may be placed in the hose. It registers to 150 lbs. Price, $1.25. A combination tire pressure and pump gage, which may be used with hand or power pump, has an automatic connection which slides over the valve and another connection for attaching to the pump hose. Price, $1.50. The vest pocket tester is designed for slipping over the valve stem. Price, $1.25. 2½-in. iron case gage for use on air compressors, storage tanks, etc., registers up to 200 lbs. Price, $1.50.—May-Skinner Mfg. Co., Chicago.

Edelmann

There are five types of tire gages, the simplest type presses over the tire valve and reads up to 120 lbs. Price, 75 cents. A pump gage to be used with hand pumps and which can be furnished to read pressure from zero to 60 to zero to 200, sells for 75 cents. The connection is in the back. Another model which is a design to be put to the hose line, having a T connection, sells for $1. The combination tire tester and pump gage, which is provided with a slip-on connection for attaching to the tire valve and which has an angle connection for attaching the pump hose, sells for $1.50. It may be used either as a tire tester or combination pump gage. Another model is mounted on an acorn connection and is provided with a shut-off cock. Price, $2.—E. Edelmann & Co., Chicago.



The Goodrich Tire Caliper gages the tire pressure to the load



The Codman & Shurtleff Tire Gage

Goodrich Tire Caliper

This tool is based on the idea that the tire must be inflated for the load which it actually carries and not simply pumped up to an arbitrary pressure which may be too high or too low to suit the conditions under which any particular tire is being used. Since the object in inflating tires to a given pressure is to prevent the tire being used when it is not round enough to carry the load properly, it is logical to use an instrument which measures the flattening of the tire and which automatically shows when the tire is too flat for the load it has to carry. Roughly, the caliper is F shaped and has a sliding jaw which measures the diameter of the tire at some point not in contact with the ground, and then there is a scale to show what the diameter should be at the ground and a tire should be pumped up until it is less than this amount. The tool folds up so that it occupies a small space in the tool box or may be carried in the pocket. It is nickel plated and packed in a leather case. —B. F. Goodrich Co., Akron.

Codman & Shurtleff

This tire pressure register has a circular dial about 2½ in. in diameter and registers up to 100 lbs. It is designed to be inserted directly in the pump line and is equipped with 2 ft. of rubber hose. Price $5.—Codman & Shurtleff, 120 Boylston St., Boston.

Schrader

The Schrader Universal tire pressure gage is a small cylindrical device which registers the pressure after it is pushed on to the valve stem. The gage will remain set even after it is removed from the tire so that if it is difficult to read as might be the case at night, it may be removed and carried into the light. Price $1.—A. Schrader's Sons, Inc., 783 Atlantic Ave., Brooklyn, N. Y.

Allen

A new tire gage has been just brought out. It is similar to the former model except that it is 1 in. shorter, being 3½ x ½ in., thus it is easier to carry and better adapted for short spokes. It is known as the Allen tyrometer and the pressure is indicated by a ring which moves up or down on a vertical scale. The gage is set over the mouth of the valve stem and the ring which indicates the pressure remains in position until returned by hand, thus making it very easy to read. Price $1.—Allen Auto Specialty Co., New York.

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Utility Pneu-Meter

This gage differs from most types in that it is a device for automatically releasing air when the desired pressure has been reached in the tire. A whistle is attached so that the man will stop pumping when the pressure is obtained. It is a cylindrical device about ⅛ x 4 in. and it is attached directly in the pumping line. The device has been improved by placing the whistle on the outside where the air can more readily pass through it making a louder signal. It is made in two sizes, one for 80 lbs. and the other for 120. The device works on the principle of a sliding piston against which a spring operates. Price $1.50 and $2 according to size.—Hill Pump Valve Co., Chicago.

Twitchell

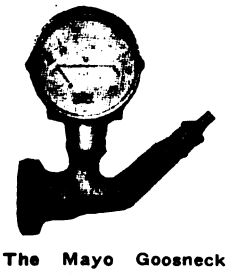
This gage is a long, cylindrical type which goes over the end of the valve stem, the pressure forcing out a plunger from the opposite end on which a pressure scale is marked. The plunger has ratchet teeth on one edge so that it automatically remains in position. It is easy to carry and easy to read since the figures are large and in white on a black background. Price $1.—Twitchell Gage Co., 1200 Michigan Ave., Chicago.

Invincible

The invincible tire tester resembles a watch in size and shape and registers up to 120 lbs. The markings on the dial have recently been changed so that the required pressure for a given load is automatically indicated. The construction of this gage is the same as standard steam gages made by this company. Price $1.25.—U. S. Gage Co., 67 Wall St., New York.

Pressurite

Gages are of the dial type and register up to 150 lbs. There are several methods of attaching the gage. One consists of a control indicator in which the gage is attached to a connection which connects with the hose line. There is a valve for cutting out the pump so that the correct tire pressure can be obtained, meanwhile, the pump is exhausting into the atmosphere. The tube indicator is similar except that there is no valve and the delivery pressure and not the pressure in the tire is registered. The former sells for $2 and the latter $1. A more elaborate design consists of a gage combed with the hose end and having an automatic air stop valve. Price $2.50.—Improved Gage Mfg. Co., 300 W. Water St., Syracuse, N. Y.



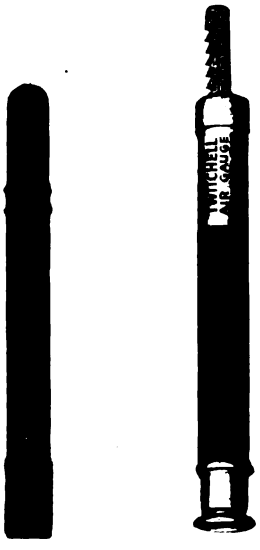
The Mayo Goosneck Tire Gage is a combination tire tester and pump gage



The Invincible Tire gage indicates the required pressure for any load



The Pressurite Tire Gage



Two pencil type tire gages. Right—The Twitchell. Left—The Allen Tyrometer

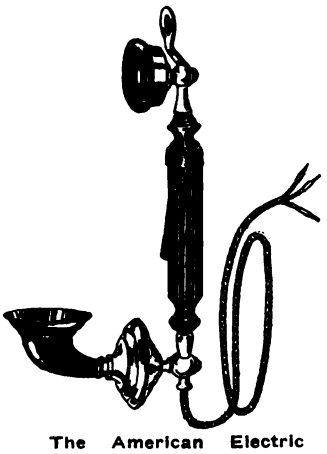


The Schrader Universal Tire Pressuse Gage is but little larger than the illustration, and may be carried in the pocket

Miscellaneous

American Electric Two-Way Car Phone

The occupant of the compartment of a closed car may speak to the driver, or vice versa, by means of this two-way car phone. The compartment instrument is of the continental type, combining a transmitter and a receiver mounted on a handle in a manner that permits the transmitter to be held to the mouth at the same time that the receiver is at the ear. At a point close to the driver's ear is the front compartment instrument, combining in one assembly, both the transmitter and the receiver. It is finished in black and nickel, retailing for $40.—G. L. Holmes, Eastern sales agent.



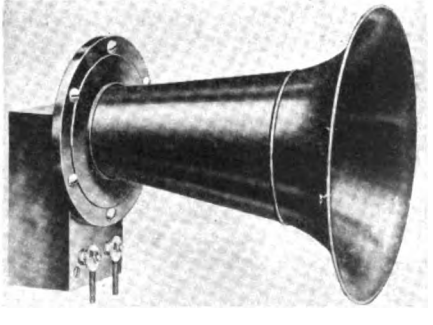
The American Electric Two-Way Car Phone

Currier-Koeth Pliers

Designed particularly for use around the car, these 6 in. combination slip-joint pliers are drop forged from high grade steel, properly heat treated, and have knurled handles. The price, 30-cents each.—G. L. Holmes, Eastern sales agent.

New Sampson Horns

The motor of the new Sampson is vertically mounted, and housed in a rectangular metal case, two features tending toward simplicity of construction and attractive appearance. It is made in two sizes, the larger selling for $15, and the smaller for $7.—G. L. Holmes, Eastern sales agent.



The new Sampson horn has a vertical motor in a rectangular case

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What is The Ideal Farm Tractor Engine?

1—Four Vertical Cylinders | *3—Deliver 16 to 40 Horsepower*

2—Four-Cycle Principle | *4—Need Few Adjustments*

THE ideal engine for farm tractors is a four-cylinder four cycle machine capable of delivering between 16 and 40 horsepower continuously without distress or trouble. This, in short, is the opinion of H. L. Horning, of the Waukesha Motor Co., who delivered a paper before the Society of Automobile Engineers, in which he predicted that this would be the ultimate type. Horning said, in part:

The usefulness of tractors increases as:

1—Weight of tractor per horsepower developed decreases.

2—Weight of engine per horsepower decreases.

3—Transmission losses decrease.

4—Tractive ability of drive-wheel becomes greater.

5—The longitudinal center of gravity of tractor and the drawbar hitch are more effectively placed.

6—Output of useful work in unit time divided by the initial cost increases.

7—Total cost per unit of work done decreases.

8—Price of tractor approaches the average income of farms that are suitable for tractor application.

9—Range of conditions under which the tractor can operate successfully broadens.

10—The tractor can do a number of things well on the farm.

11—Knowledge of the care and operation of its component parts becomes prevalent among farm users.

12—As the following questions regarding the tractor can be answered to the satisfaction of the farmer:

a—How many plows can it handle?
b—How much does it cost?
c—Will it burn kerosene?
d—What else can it do besides plowing?
e—How long can it last?
f—Is the engine the same type as in his car?
g—Can he get repairs promptly?

We will have defined a type of engine if we can establish general specifications that will make for tractor usefulness in the following respects: (a) range of horsepower for the tractors that can be used on the average farm; (b) most logical cycle for such service; (c) number of cylinders; (d) mean effective pressure required; (e) fuel range; and (f) governor control.

It is generally conceded that all tractors satisfactory for plowing must have ability to pull not less than two plows on the average soil. At least 90 per cent of all farms can be worked with two to four-plow tractors, taking 10 hp. minimum and 20 hp. maximum at the drawbar.

Various power demands on the farm exceed 20 hp. and it is useful to have an engine delivering 30 hp. The tractor engine that will do most of this work does not exceed 35 b. hp. The remaining 10 per cent of the farms will require between 35 and 70 hp.

We are chiefly interested in the ultimate engine for the 90 per cent and can therefore figure on engines of between 16 and 40 hp. In establishing these limits we must consider the increased tractor efficiency to be expected in the future and also the low efficiency in some larger types of tractors; we can do this by allowing 8 b. hp. per plow for the most efficient and 10 b. hp. for the least efficient constructon.

Undoubtedly the future holds much in store for the development of engines operating on the Diesel and semi-Diesel cycle, but it is doubtful if their weight can ever be decreased to such an extent that their greater efficiency will overcome the disadvantages of the decreased traction efficiency due to their great weight.

The two-stroke cycle engine with its simplicity seems ideal, but up to this time attempts to make a reliable and economical engine have failed. The complications resulting are far worse than those that the cycle attempts to correct.

Other new cycles are being proposed from time to time, but every demand of successful tractor operation seems to be fulfilled by the four-stroke cycle engine. Not the least of its advantages is the intimate knowledge the farmer has of the cycle, resulting from his experience with his automobile, stationary engine and the gas tractor as built up to this time. We must, therefore, consider that the four-cycle engine is and will be the most suitable for tractor service and will be the ultimate type.

The indications are that there is a tendency toward four-cylinder engines. No doubt this tendency is strongly influenced by the prevalence of that type on automobiles. The satisfaction it is giving in sizes between 16 and 40 hp. in automobile and tractor service is the influence that is making four cylinders the standard. Several successful tractors are equipped with two-cylinder horizontal-opposed engines; these have worked very well, considering the difficulties inherent in their design.

The best bore from the standpoint of kerosene burning is difficult to ascertain. Experience shows that 4¼ in. for L-head types seems to give the best results; a larger bore may give the best results for a valve-in-the-head type of cylinder.

We have established an ultimate type of tractor engine when we say it shall be a four-cylinder fourstroke cycle vertical engine capable of delivering from 16 to 40 hp. continuously without showing distress at full or overload and of running at speeds varying between 750 and 1230 r.p.m. according to the bore. This engine should run, under favorable conditions, 40,000,000 revolutions between crankpin-bearing adjustments, 80,000,000 revolutions between adjustments of main bearings and 43,000,000 revolutions between grindings of valves

QUALITY

"QUALITY and service are becoming greater factors in the field of merchandising. Long after the price of a product is forgotten the quality is remembered.

"The man who does not know his true costs is the man who prices his goods foolishly and thereby impairs the business of his sound competitors at the same time that he ruins his own.

"Too low price making based on guesswork or on partial cost is a menace to sound business."—Edward N. Hurley, Chairman, Federal Trade Commission.

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To Standardize Loads on Truck Tire Sizes

S.A.E. Recommends Definite Weights for Various Sections—Battery Dimensions Adopted

NEW YORK, Jan. 13—Steady progress has been made by the Standards Committee of the Society of Automobile Engineers during the year gone by. At the annual meeting, Jan. 11, reports were submitted by nine divisions of the committee, and of these eight were accepted without discussion. They will now be placed before the society for a mail vote, and if confirmed will become recommended practice.

One of the most important reports had to do with the carrying capacity of solid rubber tires for commercial vehicles. This subject has been under discussion for many years, but not until now has it been found possible to make a specific recommendation.

The following table is suggested and, it is pointed out, if it is adhered to rationally and not abused by overloading, it is likely to give entirely satisfactory tire life:

Nominal Width of Tires	Gross Load Per Wheel in Lbs. Tire Diameter 36" and Under	Tire Diameter 40" and Over
3"	1,000	....
3½"	1,300	....
4"	1,700	....
5"	2,500	2,600
6"	3,300	3,500
7"	4,200	4,500

For some time the electric vehicle division has been working on the standardization of battery dimensions, and has now prepared a table which it offers for recommended practice. The table follows:

HIGH-RIB JARS

	Inches
Height	13⅝
Width	6¼
Thickness of wall	¼
Height of rib	2¾
Height above rib	10⅝

Lengths in Inches

2	3½	5	6⅞
2 5/16	3 11/16	5 5/16	7
2½	3 13/16	5½	7⅛
2 9/16	4	5⅝	7⅜
2 13/16	4¼	6	7½
3	4 5/16	6¼	7¾
3⅛	4½	6½	8
3 15/16	4 25/32	6¾	8¼

Tolerances: + or — 1/32 in. for all dimensions except thickness. Jar walls 5/32 in. thick are optional, but when used all outside dimensions including height should be increased 1/16 in.

LOW-RIB JARS

	Inches
Height	12 7/16
Width	6⅛
Thickness of wall	⅛
Height of rib	1¾
Height above rib	10 7/16

Lengths in Inches

2	3½	5	6½	8
2¾	4¼	5¾	7¼	..

Tolerances: + or — 1/32 in. for all dimensions except thickness. Jar walls 5/32 in. thick and optional, but when used all outside dimensions including height should be increased 1/16 in.

The other reports were largely of progress. The Ball and Roller Bearing Division is working on ball thrusts; the Iron and Steel Division suggests dropping the specifications for malleable iron and submitting others; the Truck Standards Division is working on government truck specifications, and the Miscellaneous Division reports progress on all the other details under its consideration.

Gasoline Prices Advancing

NEW YORK, Jan. 13—Gasoline prices throughout the country are gradually being adjusted to the higher scale started two weeks ago by the Standard Oil Co. and the independents. This week's advances embrace such territories as Pittsburgh, Oklahoma, Alabama, Mississippi, New Mexico, Arkansas and Louisiana.

The Atlantic Refining Co. has advanced gasoline prices as follows in Pittsburgh: Automobile grade, 25 cents; 68-70 deg., to 28 cents; 73-76 deg., to 32 cents a gal. Previous prices for the three grades were 25, 27 and 29 cents, respectively.

The Texas Co. has advanced the price of gasoline 1 cent a gal. in the following States, the new prices being: Oklahoma, 22 cents; Alabama, 26 cents, minimum 22½ cents; Mississippi, maximum 23½ cents, minimum 21½ cents. Kerosene has been advanced ½ cent a gal. in New Mexico. This company has advanced prices in Arkansas and Louisiana 2½ cents a gal. The maximum and minimum prices there now are: Arkansas, 23½ and 23; Louisiana, 23 and 21 cents.

Magnetic Knight Is Coming

NEW YORK, Jan. 11—A car in which the three features of a Knight engine, Entz magnetic transmission and worm drive are combined is being developed in this city by Watson & Stoekle, 351 West Fifty-seventh Street. It will be styled Knight Special, and the chassis will be sold at approximately $4,000, or will be equipped with a custom body to suit the purchaser. The engine is the Moline-Knight four-cylinder 4 x 6. One of the other features is the rear suspension on 61-in. cantilevers. There are no levers visible in the driver's compartment, the gearshift, of course, being replaced by the Entz equipment and the emergency brake being pedal-operated. The wheelbase is 132 in. Leather universals are used and a Timken axle. One car has been built and plans are going forward for a moderate production this year.

Automobile Maker at Milwaukee

DETROIT, Jan. 12—A real estate deal has been transacted in Milwaukee which includes 60 acres of land alongside of the C., M. & St. P. Railroad, and which it is said has been purchased for a large Detroit motor car manufacturer.

Ford Has Big Milwaukee Business

MILWAUKEE, Jan. 12—The Ford Motor Co. has enjoyed an increase of 400 per cent in sales here since August 1, when the new sales policy was inaugurated and the branch was discontinued.

Dunham Heads Enlarged Society of Engineers

Vincent and Manley Become Vice-Presidents of Society of Automobile Engineers

NEW YORK, Jan. 12—With the closing of the last session of the winter meeting of the Society of Automobile Engineers yesterday, the society, under this name, passed out of existence. In its place there has been born a newer, broader society, which will cover every branch of self-propelled transportation—the aeroplane, the motor car, the farm tractor, the motor boat. Members already have agreed to call it the Society of Automotive Engineers; a mail vote will confirm the christening.

The winter meeting was spread over three days, the Standards Divisions meeting Jan. 9, the Standards Committee Jan. 10 and the business session Jan. 11. It was at the latter that the principal business was transacted.

George W. Dunham, Consulting Engineer, was elected president, other officers elected being: First vice-president, Jesse G. Vincent, vice-president Packard Motor Car Co.; second vice-president, Charles M. Manley, vice-president Manley Drive Co. Members of the council: B. B. Bachman, engineer, Autocar Co.; H. L. Horning, engineer, Waukesha Motor Co.; C. W. McKinley, engineer, Willys-Overland Co.; F. E. Moscovics, Nordyke & Marmon Co. Herbert Chase, assistant manager of the S. A. E., is treasurer.

In his opening remarks President Huff pointed to the great growth of the society, which now has over 2000 members; in January, 1916, the total was 1783, and in January, 1917, 2120. The financial condition of the society is indicated by the surplus of $30,490.

The meeting was brought to a close with a banquet at the Biltmore on Thursday evening, at which more than 800 members and guests were present.

Sherwin and Otis on Chandler Board

NEW YORK, Jan. 13—At a meeting of the directors of the Chandler Motor Car Co., held here last week, vacancies on the board caused by the resignation of James B. Bell of Toledo and James S. Dunstan of this city were filled by the election of John Sherwin, president of the First National Bank of Cleveland, and Charles A. Otis, senior member of the banking firm of Otis & Co., Cleveland. The board as now constituted consists of F. C. Chandler, president; W. S. M. Mead, vice-president; Samuel Regar, treasurer; J. V. Whitbeck, chief engineer, and J. W. Prentiss, of Hornblower & Weeks; John Sherwin, First National Bank of Cleveland, and Charles A. Otis, of Otis & Co., Cleveland.

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A Department of Better Mechanics

No. 6

Hudson Super-Six Oiling System Adjustments

THIS system when properly adjusted is satisfactory and free from trouble, and ordinarily should be left alone. Trouble is most usually due to a lack of understanding of the system or improper adjustment.

General Explanation of System

Lubrication is by splash.

Oil is pumped from the pressed-steel reservoir through a screen and fed directly into the timing gears. From the gears it is carried through the splash pans and back into the reservoir.

The pump is mounted at the front of the engine, at the left-hand side when facing the car from the front. It is of the eccentric-operated plunger type in which the amount of oil pumped depends on the travel of the plunger (see Fig. 3).

At slow speeds the amount the plunger moves is restricted by a central eccentric connected to the throttle lever. As the throttle opens the control eccentric moves, allowing the plunger to travel farther and permitting more oil to be pumped.

Adjustment is effected by setting this control eccentric in proper relation with the throttle lever.

Evidence of Poor Adjustment

1—Excessive and continued smoking at slow speeds. Sooty plugs.

This indicates that the central eccentric does not shorten the stroke of the pump sufficiently. Adjustment of control eccentric necessitated.

2—Oil pressure gage readings other than of from ¾ to 1 lb. when idling or 2 to 2½ lb. at high speed.

Eccentric adjustment necessary, or a leak in the oil pipe lines.

3—Hot motor.

Dirty oiling system, necessitating cleaning and change of oil, with possible readjustment..

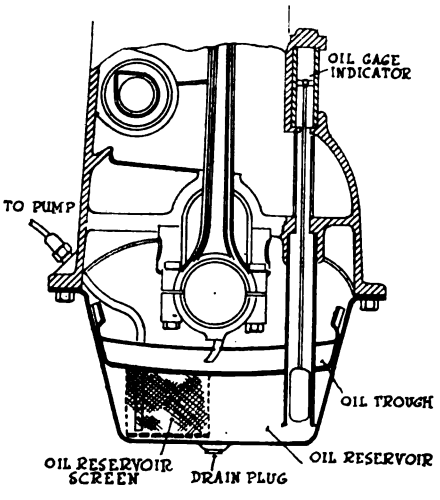


Fig. 1—The oil reservoir should be drained and cleaned about every 1000 miles. If the base be removed, always clean the screen. When replacing base, have the oil trough full of oil, that the cranks may get oil from the start

4—A pressure reading at slow speeds—none at high speeds.

Caused by the control cam permitting the plunger to work at slow speeds but stopping it at high speeds. Adjustment of cam necessary.

It is usually advisable to remove the oil pan, clean and refill with new oil in case of any oiling troubles before making any adjustments. A draining and replenishing of the oil supply is advisable every 1000 miles; or after the first 500 miles with a new car.

To Clean the System

1—Remove oil reservoir, drain plug and drain system.
2—Remove base.
3—Remove two bolts holding oil reservoir, screen in place, and wash with gasoline or kerosene.
4—Wash oil troughs and reservoir with gasoline or kerosene.
5—Remove oil suction tube and see that it is open and clean. Blow out, if necessary.
6—Replace oil suction tubes and *make all joints tight*, otherwise the oil pump will draw air, preventing oil circulation and destroying the action of the pump.

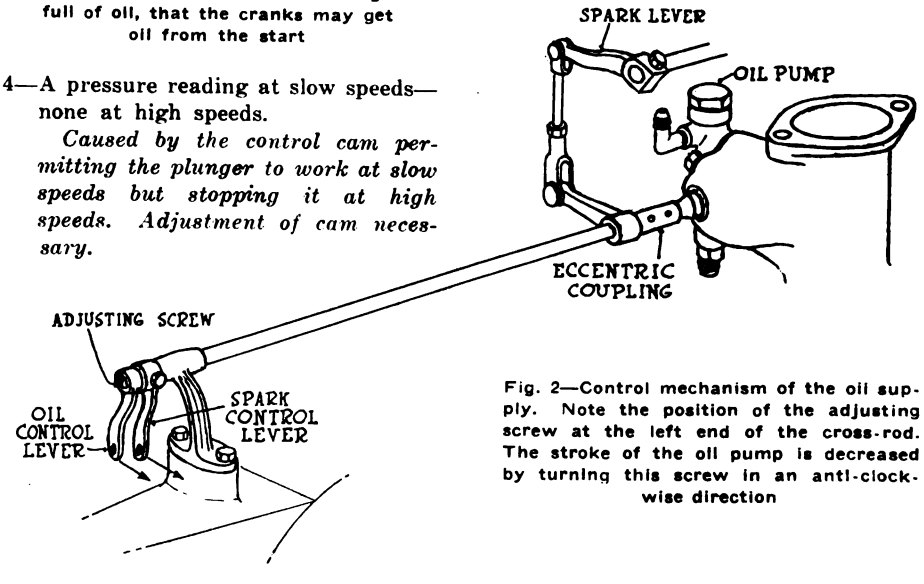


Fig. 2—Control mechanism of the oil supply. Note the position of the adjusting screw at the left end of the cross-rod. The stroke of the oil pump is decreased by turning this screw in an anti-clockwise direction

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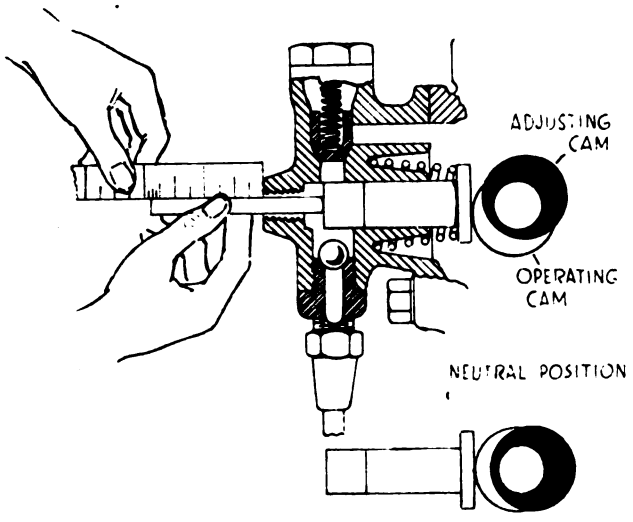
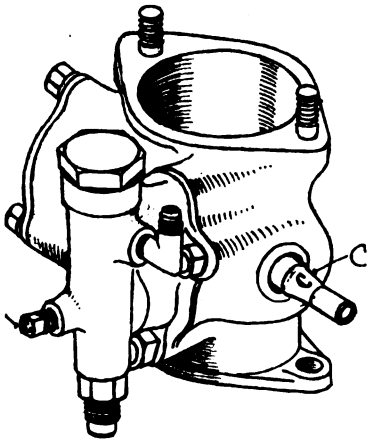


Fig. 3—Left—Sectional view of the oil pump, showing method of measuring the stroke. With the engine idling, the stroke should be about 1/32 in.; when speeding, about 1/8 in. The small vertical spring at the top should be stretched or shortened until the oil pressure gage reads 2½ lbs., with the engine speeding, and the cam in the neutral position.

Fig. 4—Right—The letter C of the eccentric cross shaft should be just forward of the vertical, when the engine is speeding, in most cases of proper adjustment



7—*Fill oil troughs with oil.* Replace base.

If the oil troughs are not filled, the bearings, etc., may not receive oil enough to prevent damage when starting the motor.

8—Refill the reservoir with new oil. This takes somewhat over 3 gal., and the indicator gage in the right of the motor should be about halfway up the column.

To Adjust Oil Pump

1—Loosen throttle arm on pump-control eccentric at the right side of engine.

2—Turn control eccentric arm with a screwdriver until it is entirely free from plunger.

This point can be determined when engine is idling by turning the screw (Fig. 2) until a point is reached where the screw turns freely.

3—It is then in the position shown in Fig. 3, permitting the plunger to take full stroke under all conditions.

4—Speed motor up.

5—Note oil pressure. It should be about 2½ lb.

6—If it is more than 2½ lb., stop engine, remove oil valve spring, as shown in Fig. 3, and stretch it slightly.

7—Replace spring and again test.

8—Should the gage read less than 2½ lb., squeeze the spring shorter and test.

9—Couple up throttle lever, as shown in Fig. 2.

10—Start engine. Let it run with closed throttle.

11—Turn adjusting screw (Fig. 2) in an anti-clockwise direction until the oil gage registers ¾ to 1 lb.

12—Lock throttle lever in place.

To Check Up Adjustment

1—Remove plug, shown in Fig. 3, and insert a match or nail in the hole, bringing it into contact with the plunger head. The pump can be felt going through its stroke. (*Care must be taken in doing this, as the fan runs very close to the plug and offers opportunity for injury.*)

2—When the engine is idling, with the throttle closed, the stroke of the plunger should be about 1/32 in.

3—When racing, the plunger should have a stroke of about ⅛ in.

4—With the throttle open the mark (*C*) on the control eccentric arm at the coupling should be just forward of the vertical (see Fig. 4).

5—At slow speed the oil gage should read between ¾ and 1 lb.; at high speeds, about 2½ lb.

In making any adjustment on the oil pump, always start with the control eccentric in the inoperative position and follow the steps through as outlined, otherwise the cam may be set in the wrong position.

What Every Mechanic Should Know

How to Grind and Sharpen a Drill

FEW mechanics know how to sharpen a drill or how to tell when it is properly sharpened. Four factors are essential. They are:

1—Both cutting lips should have the same angle to the axis; otherwise the cutting will all be done by one lip and the drill will drill oversize. (See Fig. 5.)

2—Both cutting lips should be exactly the same length. This throws the point of the drill off-center, causing the drill to cut oversize. (See Fig. 6.)

3—Proper clearance back of the cutting edge. Insufficient clearance causes the drill to drag, cut hard and get dull quickly.

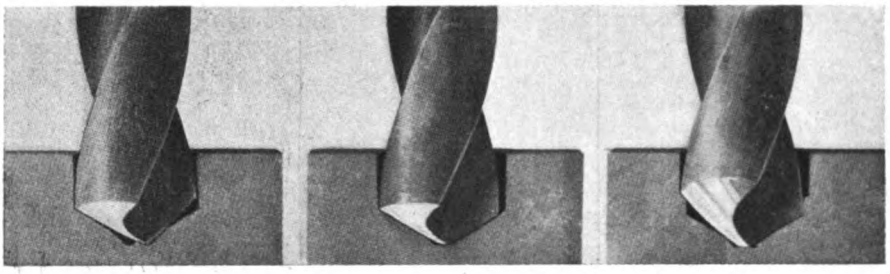
4—The angle of the lips should be about 60 deg. each.

Wheels for drill grinding should be fairly soft and open so they will not clog or burn. The drill should be pressed lightly against the wheel and carefully watched to see that it is not burned and the temper drawn. WATCH THE SURFACE from which the grinding wheel LEAVES, as the heat is concentrated there.

The Job

1—Hold the drill lightly against the wheel, as shown in Fig. 8, with the cutting lip on the wheel.

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RESULTS OF IMPROPERLY GROUND DRILLS
Left—Fig. 5—Unequal lip angles. Middle—Fig. 6—Unequal lip lengths. Right—Fig. 7—Both lip angles and lengths unequal

2—Twist the drill and at the same time throw the right hand down in order to grind the proper clearance.

3—Grind both edges this way, trying to make the cutting lips straight at the same angle to the axis of the dull and equal length.

4—Check the length of the cutting lip, as shown in Fig. 9.

5—Check the angles of the cutting lips, as shown in Fig. 10. The best cutting angle is 59 deg.

6—When using the drill note (a) the chips made by the cutting. *The chips should curl from the cutting edges and not have the appearance of being scraped out. Scrapings and fine chips indicate too little clearance.* (b) See that the hole does not have the appearance of any of those shown in Figs. 5, 6 or 7.

7—Brass or thin sheet metal may be more readily drilled if the cutting lips are beveled, as shown in Fig. 11. This prevents the drill from digging in and catching.

8—Always clamp or hold the work being drilled to prevent drill catching and breaking.

9—In starting to drill use moderate speed, gradually increasing until the best cutting speed is obtained.

10—When drilling small holes speed the drill up and go carefully when the drill is breaking through the work. This is the point where the drill usually catches and breaks.

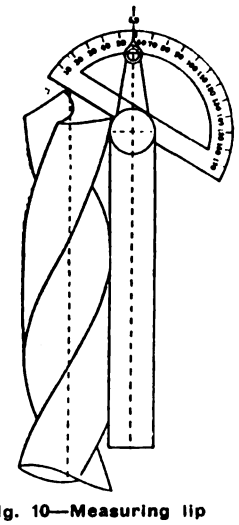


Fig. 10—Measuring lip angles

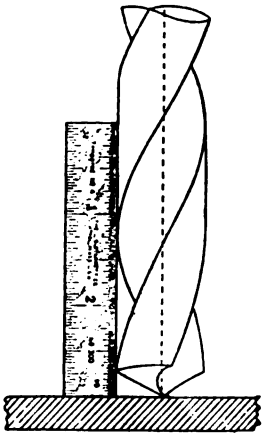


Fig. 9—Method of measuring cutting lip length

11—The following are the cutting compounds for the various metals:

(a) Hard Steel—Turpentine, kerosene.

(b) Soft Steel—Lard oil, machine oil.

(c) Brass—Soda water, if anything.

(d) Aluminum—Kerosene.

(e) Cast Iron—None. An air blast is a very good cooling medium for cast-iron drilling.

12—In addition to using turpentine on hard material, grinding the sharp angles, as shown in Fig. 7, facilitates the cutting. Care must be taken in doing this. This is the same method as used in drilling brass or thin material.

13—If the drill chips out at the cutting edge there is too much feed, or the drill has been ground with too much clearance. A split up the web is caused by the same improper grinding.

14—Too much speed wears the outer corners of the cutting edge.

Don't

1—Lay Wrenches, hammers, chisels, etc., on the fenders or on the seat cushions. Cover the fenders, and remove the cushions during the work.

2—Spill oil, or smear grease over the finish or upholstery.

3—Try to squeeze one car past another in the shop, even though the fenders will spring enough to let the car pass.

4—Pound the end of a shaft with a bare hammer. Use a babbitt hammer, or deaden the blow with a piece of brass or wood.

5—Push a car around the shop, with greasy hands on the varnished surfaces. Either wipe your hands, or place a piece of dry waste between your hands and the car.

6—Leave a car standing in a pool of grease.

8—Use an 18-in. Stillson on a ⅜-in. nut.

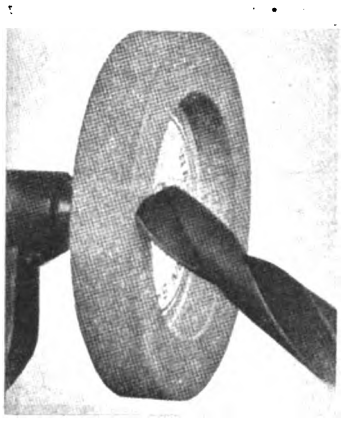


Fig. 8—Proper method of starting to grind a drill

Previous Articles

Subject	No.	Date of Issue
Overland—Main and connecting rod bearings	1	Dec. 13
Cadillac—Cam and fan-shaft driving chains	2	Dec. 20
Maxwell—Rear axle repairs	3	Dec. 27
Chevrolet—Clutch repairs	4	Jan. 3
Borg & Beck—Clutch adjustments	5	Jan. 10

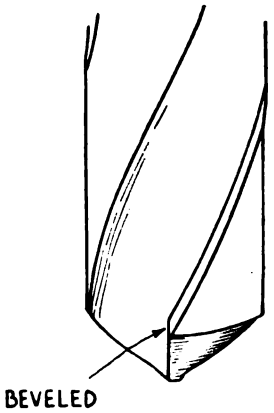


Fig. 11—Method of beveling cutting lip to cut thin or hard material

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The nineteenth in a series showing

Dealers Who Have Made Good

WALTER J. BEMB, president and general manager of The Bemb-Robinson Co., Detroit, Michigan distributer of the Hudson, although still in his early thirties, is an old man in the motor car business. He has been selling cars since his youth—nearly a score of years—a lifetime compared with many others.

Back in 1901, when William E. Metzger, later of E.M.F. fame, was the only automobile dealer in Detroit, Bemb became affiliated with him in a minor capacity, and found varied employment in washing and driving cars, delivering new electrics and other menial and mechanical duties. A little later he graduated to the sales force and assisted in selling the Pope-Toledo, the Autocar, Olds, Cadillac, Columbia and Pope-Waverly.

In 1904 he joined "Jack" Brady, who handled the Peerless, Autocar and Pope-Hartford, was Ford branch manager for a year or so, then returned to "Jack" Brady, where he remained until he was appointed Hudson district sales manager for the central States in 1909.

In 1912 he organized the Bemb-Robinson Co. and since that time has been Detroit distributer with constantly added territory, until now he has the entire State except the upper peninsula. He is now sole owner of the company, having bought out his partner, L. J. Robinson.

The Why:

Broadly speaking, Bemb's success is due to the fact that he excels in every branch of his business. He is an A-1 salesman, an expert mechanic, a thorough organizer and first, last and always an EXECUTIVE. His main duty is not to work but to THINK.

As a rule, he stands apart and directs; the carrying out of his orders is left to a staff of competent assistants.

His biggest duty is the development of ideas for expanding his business. Since his mind is free from detail, he has originated many ideas.

Service is his long suit. He has five cars, ranging from big emergency cars, fully equipped, down to autopeds, all painted distinctively in black-and-white, so that whenever a call comes, night or day, he is ready to fill it INSTANTLY as promptly as the fire department. He does not confine service to the repair department, however, but extends it to all branches of the business. Even such details as prompt and courteous treatment personally at the switchboard, or the making of tire-changes in minimum time are frequent. No item is too big or too small.

Bemb's success may be summed up in one short sentence, "Don't overlook any bets." It means two things; *first*, that it is necessary to keep one's eyes wide open all the time for ideas applicable to his business, gleaning them from other MERCHANTS, either in the automobile business or out of it; *second*, it means perfection in every detail of the business, for imperfection would be overlooking a bet.



Walter J. Bemb

Bemb-Robinson Co.
Detroit

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Dodge Factory Tripled In Its 2-year Business

Started with Small Force and Now Has 12,000 Men—Has Built 115,000 Cars

DETROIT, Jan. 15—Commencing two years ago to make cars of their own design, Dodge Brothers occupied a factory comprising 20 acres of floor space which within the past 24 months has grown until, with buildings now under construction and nearing completion, the plant includes a total of 72 acres. One of the new structures now in process is an eight-story building 310 ft. long and 125 ft. wide, to be used exclusively for the storage of rough and unfinished stock.

The company employs 12,000 men and is producing 350 cars per day, and has built and sold more than 115,000 cars in the first two years. The factory is so laid out that the main assembly building, which is 1100 ft. long, 60 ft. wide, four stories high, and runs from east to west, is fed with parts and units from the other buildings and wings which run from north to south. Every department is so placed that its product will travel to the assembly floors by the shortest possible routes.

The chassis and final assembly departments are confined to one floor in the main assembly building, while the floor immediately below is occupied by store rooms. The one above contains the trim and top departments, where the body is completely upholstered and the tops and curtains are manufactured. The top floor of this building is given over exclusively to enameling.

The plant embodies practically every known modern device for efficient production of motor cars in quantities. Much original equipment in the way of conveyors and machinery has been constructed and an elaborate system of enameling ovens, with a capacity for 400 bodies daily, and which impart the finish to the bodies, fenders and small parts, is in operation. This is the only equipment of its kind. In it bodies are lifted in a cradle attachment to an endless belt at the front end of the system and carried through four distinct coats of enamel with necessary rubbing and intermediate operations and are then dropped off of the conveyor 800 ft. away from the starting point.

During this operation the bodies are traveling continuously, passing upward through an opening in the ceiling to the first oven housed on the roof and making a complete loop of several hundred feet. Returning, they are again sanded, rubbed and given the second coat into the second series of ovens with the process continuing until they have passed through the four coats of enamel. The ovens are heated by electric coils which are regulated in temperature by a control tower. The enamel is first clarified in the basement of the same building and is applied to the bodies behind a glass screen, which excludes all dust.

Other conveyors are in use throughout the shop for the assembly of motors, transmissions, rear axles, enamelling and baking of frames, assembly of wheels, rims and tires and for the chassis and final assembly. All of these conveyors are motor driven and may be regulated to give an output of 300 to 500 cars per day, the motor power being supplied by mounting a standard automobile motor on a suitable frame.

An industrial railway completely encircles the plant and enters every department on the ground floor. The forge plant contains more than 50 steam hammers, ranging in capacity from 400 to 7500 lbs. each, and has a daily capacity for producing 185,000 lbs. of steel forging.

The heat treating department treats from 90,000 to 100,000 parts every 24 hrs., and for this work uses 30 furnaces, 20 cyanide pots, 1000 lbs. of cyanide and 14,000 gallons of fuel oil daily. An underground circulating and cooling system is used to maintain an even temperature in the oil and other cooling solutions.

The machine shop operates by means of the unit system so that all machine operations necessary to complete cylinders, connecting rods, pistons, transmission cases, etc., are performed in consecutive order and travel in a straight line without leaving the department. The cylinder department contains huge machines which mill off the tops of 24 cylinder blocks at one setting. The screw machine department has automatic machines which produce 300,000 parts each 24 hrs., and some of the operations are so fast they can scarcely be followed by the eye. Similar facilities prevail throughout the institution, and in each there is demand for astounding quantities of material. In the trim shop 525 full sized hides are used daily for upholstering cars, 11,375 lbs. of hair is necessary for the daily output of cushions and backs, and 4675 yards of mohair are required for tops and side curtains.

Dodge Brothers operate a completely equipped service school for instructing salesmen, service employees and a number of factory and office workers regarding the construction, care and operation of the motor car and class room lectures are supplemented by periods of actual assembly and repair work. Diagrams, cut out working models and a complete exhibit of units and parts aid in making the course one replete in the fundamentals of car construction and operation.

Oppose Retailer-Jobber

LOS ANGELES, Jan. 15—Garage operators in the San Joaquin Valley region of California who have been accustomed to deal in accessories are reported to be organizing quietly for the purpose of buying their supplies from wholesalers and jobbers who do no retail business. Practically all of the big wholesalers on the Coast have announced a wholesale-only policy, but this does not seem to satisfy the garage men, who claim a "backdoor" business is being done. When asked about this one of the proprietors of a big establishment said the garage men do not know what they are talking about. He claimed that houses like his have to do some business for the sake of friendship, etc., that is against their wishes, but they cannot get out of it. He claims all business of this kind on the Coast would not amount to more than 2 per cent of the total volume.

New Car from Rochester

ROCHESTER, N. Y., Jan. 15—The Crowther-Duryea Motor Co., this city, is about to begin the manufacturing of its automobiles. One hundred cars, it is stated, are being assembled at the present time at the factory in Ridgeway Avenue.

Concrete Floor in Tent at Kansas Tractor Show

Exhibit in Same Location as Last Year But Facilities Will Be Much Better

KANSAS CITY, MO., Jan. 15—The second annual tractor show at Kansas City will be held the week of Feb. 12 to 17. The show will be located on the Union Station Plaza, as it was last year, but will be much larger. The tent will be 500 ft. long, and the great weight of the canvas necessitates that it be held up on steel poles. There will be a double floor and a double wall of 10-oz. paraffined khaki, and the use of forty-five salamander stoves will insure comfort regardless of the weather.

Inside the tractor tent this season there will be a double floor. Practically all contracts have been let for the space. There will be shown seventy different types of tractors, as well as power cultivators, all kinds of new power lift machinery, power lift plows and special binder hitches. There will be shown tractor attachments for automobiles. A large number of new field-tractor factories will make their début, among them some automobile manufacturers of popular-priced cars. The famous caterpillar principle of traction which was the basis of the wonderful "tanks" which have played such an important part in the European war will be among the exhibits.

The presence of so much farm machinery in addition to the tractors will make this show of special interest to implement dealers of this section of the Southwest.

Chenoa Garages Want Cash

CHENOA, ILL., Jan. 16—The Central Illinois Garage Owners' Association was organized here. L. J. Schultz of Chenoa was elected president and J. A. King, Flanagan, Ill., secretary-treasurer. It was voted to place the business of each firm represented upon a strictly cash basis, as the book accounts of each were becoming a financial burden. Garage owners from Gridley, El Paso, Pontiac, Bellflower, Colfax, Minonk and other small cities of central Illinois agreed to join the new organization.

Firestone Heads Rubber Association

NEW YORK, Jan. 11—H. S. Firestone was re-elected president of the Rubber Club of America at the annual meeting held Jan. 8. More than 700 representatives of the rubber industry attended. The guest of honor was ex-President William Howard Taft. The name of the club was changed to the Rubber Association of America.

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Movie Film Becoming Big Car Sales Feature

17,000 Miles of Film Used Since Product Invaded Motor Car Advertising Field

NEW YORK, Jan. 15—The use of motion pictures for advertising purposes is rapidly assuming big proportions in the motor car industry. During the three years that this kind of film has been produced more than 90,000,000 feet have been flashed on the screens of nearly 25,000 theaters scattered all over the United States. To-day over 10 per cent of the output of film is sold direct to motor car dealers, garagemen, repairmen and accessory dealers. Tire and accessory dealers are the largest consumers with the garageman next.

Advertising films vary in length from a minimum of 20 ft. to thousands of feet, and are in three classes: (1) Industrial, which show factory processes; (2) Commercial, which use living models, such, for example, as for clothing advertising, and (3) Animated cartoon.

Of these three, the animated cartoon film is by far the most popular. Generally the film is from 20 to 50 ft. in length, the average being about 25 ft. Such films cost the dealer about $7, are bought outright and become his property. The dealer then arranges with his local theater to show the picture for so much a week, the price varying from $1 to anything the theater manager thinks he can get, though it is seldom more than $5.

The cost of the film includes the preparation of the scenario, the making and delivery of the film to the dealer. One typical example will serve to show the action of a film. A tire vulcanizing business is to be advertised. On the screen appears a car moving along a road; a tire bursts; the driver climbs out and after making some comedy gestures, climbs in and drives to a garage. At the garage the burst tire may either be whipped off the wheels by unseen hands or may be taken off by a troupe of brownies and replaced in the same way and the car owner drives off. The next scene is a picture of the garage and some such lettering as "We specialize in emergency service—Blanks Garage." Any kind of lettering can be used.

Manufacturers of the film claim 100 per cent efficiency of circulation. That is to say, every one in a theater sees the picture. It is also pointed out that pictures always have been the best possible means of conveying an idea and that the action compels attention.

It is possible to purchase stock films ready made covering practically every activity in the retail motor car trade—garages, repairshops, accessory stores, machine shops, car selling, etc. And there is almost infinite variety in the method of treatment of the various films on the same subject. Stock film can be shipped in three days by parcel post.

In the case of an accessory dealer, the film can be made to serve a double purpose. In addition to advertising the manufacturer through the filming of some nationally known and advertised brand, the name of the local dealer also appears. The dealer's name can be cut off and another put on in its place. Thus a manufacturer might purchase a number of films and loan them in rotation to a number of his dealers in various cities.

Manufacturers of advertising film have banded together into an association which was formed in July of this year. The association is styled Advertising Film Producers Association of the World, the officers being: President, W. A. Harris, Federal Development Co., Alliance, O.; treasurer, Fred C. Laflin, Camel Film Co., Chicago; secretary, Carl B. Rowntree, Scenic Film Co., Atlanta, Va.; vice-president, A. V. Cauger, Kansas City Motion Picture Co., Kansas City.

Ford Buys Material For 1,000,000 1917 Cars

DETROIT, Jan. 17.—Special Telegram—It is reported that the Ford Motor Co. has purchased from the United States Steel Corp. sufficient material for the construction of 1,000,000 cars during the 1917 fiscal year of the Ford company. This is almost double the production for 1916 when 533,921 cars were turned out, and is more than twice as much as the Ford company has turned out in 12 years up to 1915. In the 13 years of its existence it has turned out 1,406,997 cars.

The greatest production was reached in 1916, the number of cars produced this year being 225,708 more than for 1915, which in turn exceeded the 1914 output by 59,906 cars. The daily average output in 1916, based on 300 working days, was 1816 cars.

Prices News

Owen Magnetic Prices Go Up

CLEVELAND, Jan. 11—The Baker R. & L. Co. has revised the prices of its models. On the 125-in. chassis, prices of the coupe, touring car, limousine and landaulet have been advanced $150. On the 136-in. wheelbase chassis, the roadster, four and seven-passenger touring car, limousine and landaulet have been advanced $200.

Changes in Chalmers Prices

DETROIT, Jan. 9—The Chalmers Motor Co. has increased prices for its roadster and five-passenger models to take effect March 1. The roadster will advance from $1,070 to $1,250 and the five-pasenger from $1,090 to $1,250.

N. A. C. C. Accepts Bid to Open Big Coast Show

Alfred Reeves, of Chamber of Commerce, to Make San Francisco Show Semi-National

NEW YORK, Jan. 11—That the Pacific Coast may come into its own as the promoter of a national show ranking with those in this city and Chicago may or may not be indicated by the fact that the National Automobile Chamber of Commerce has accepted the invitation of the San Francisco association of dealers to open the San Francisco show, Feb. 10-18.

The Coast has no national show and is far distant from the New York and Chicago shows, yet despite this fact many Coast men make an Eastern pilgrimage every winter to the big exhibits. A lot of them are here this week, and while they are here the message was sent to the chamber.

The announcement of acceptance was made at the annual banquet of the National Automobile Chamber of Commerce and was received with cheers by the members, all of whom are manufacturers of cars. It is recognized by the trade that while the chamber's only two shows are those in New York and Chicago, they are equaled in interest and often in attendance by several of the big dealer shows, especially in the West.

Liberty and Dort for Owen

CHICAGO, Jan. 11—O. C. Owen has formed the firm of O. C. Owen & Co. and will distribute the Liberty and Dort in Chicago territory. The firm represents a merging of former interests of the Owen-Buxton Co. and Owen and MacGowan, Owen being president; A. W. Granger, vice-president; F. D. MacGowan, Jr., secretary, and Edward J. Kane, treasurer. The firm will operate in northern Illinois and northwestern Indiana, temporary headquarters having been established at Room 144, Lexington Hotel.

Correct Prices of Jeffery Cars

KENOSHA, Jan. 11—In the issue of Motor World for Dec. 27 the price of the Jeffery four was inadvertently given as $1,335. This should have been $1,095. Prices on all the models are: Jeffery Four—Seven-passenger, $1,095; two-passenger, $1,065; sedan, $1,260; sedan combination, $1,320. Jeffery Six—Seven-passenger, $1,465; two-passenger, $1,435; sedan, $1,630; sedan combination, $1,690.

Winnipeg New Ford Assembly Center

DETROIT, Jan. 9—The Ford Co. of Canada has discontinued the assembly of cars for Toronto, Montreal and Winnipeg at its Ontario factory, and Ford cars will now be assembled in the large branch factories in those cities.

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Prominent Tradesmen Assume New Duties

Resignations and Promotions Place Workers in New Places

C. H. Vincent, who was formerly associated with Ralph Mulford and E. C. Patterson, has severed his connection with the Hudson Motor Car Co. and is now an experimental engineer for the Packard Motor Car Co.

C. O. Assmus, who has been associated with the foreign department of the Maxwell Motor Co., Inc., has been made export sales manager.

C. H. Blomstrom is now connected with the Safety Motor Co., Grenloch, N. J. This concern is making the Frontmobile.

Daniel Zeisloft, formerly with the Marathon Tire & Rubber Co., has joined the sales force of the Star Rubber Co., of Akron.

Andrew Langerbacher, who was connected with the sales department of the Reo Motor Car Co., has been appointed sales manager of the Duplex Truck Co., Lansing.

R. F. Moore has been made director of sales for the Champion Motors Co., of Fulton, Ill., and Cleveland. He was formerly with the Denby Motor Truck Co.

W. R. Tracy has become assistant sales manager of the Oakland Motor Car Co., Pontiac. He succeeds Thos. H. McDearmond, who has joined the Geo. P. Miller Co., Oakland dealer in Madison, Wis.

W. H. Masten has succeeded C. B. Voorhis as general sales manager of the Oakland Motor Car Co. of Michigan, Pontiac.

B. Voorhis will become head of the selling division of the Nash Motors Co., Kenosha, early in February. Voorhis recently resigned from the Oakland Motor Car Co., of which he was vice-president, director and general sales manager.

W. J. Slater has been appointed special representative of the general sales department of the Firestone Tire & Rubber Co. He was formerly manager of the sales promotion department of the company.

Chas. B. Voorhies, general sales manager of the Oakland Motor Car Co., has resigned to go with the Nash Motors Co., Kenosha, Wis. Thos. H. McDearmond, assistant sales manager of the Oakland company, has joined the Geo. P. Miller Co., Madison, Wis., Oakland dealer for Wisconsin.

R. S. Hartzell, formerly manager of the Cleveland branch of the Goodyear Tire & Rubber Co., has been made manager in charge of motor car manufacturers' business for the state of Ohio. Hartzell is succeeded at Cleveland by F. N. Hammond, formerly manager at the Youngstown branch.

A. W. Robinson, formerly the truck sales manager for the Locomobile Co. of America, has been appointed managing director for Gaston, Williams & Wigmore, Ltd., of London, England, the English branch of the American firm of the same name.

P. H. Gribbon has been appointed retail sales manager of the Detroit retail sales branch of the Willard Storage Battery Co., and will handle the Detroit territory, which includes all of Michigan and a part of Ohio. Gribbon was formerly in charge of the Chicago branch for the Willard company.

L. E. Nutt has resigned as purchaser of materials and director of the Velie Motorg Corp., with which he has been associated for 15 years.

W. H. Masten has been appointed sales manager of the Oakland Motor Car Co. of Michigan. Masten has been associated with the Oakland company for several years.

Al Reeks, general sales manager for the Nash Motors Co., has resigned and will enter business for himself.

J. G. Roe, who was connected with the Hupp Motor Car Corp., has joined E. A. Nelson and will look after sales details for the new Nelson car.

Putting Your City Into Publicity

(*Continued from page* 33)

news. But if I take this story, make the statement myself and cite facts to prove my statement it becomes real news. To prove the statement I can give figures as to the number of inclosed jobs we have sold in past years and this year, and can give the names of a number of people who have bought convertible jobs this season. That makes the story of direct interest in Callawassa and it will be read by newspaper readers.

"If a factory, in its welfare work, plans to educate its men in citizenship and history, and urges them to become citizens, the story may be switched around and made into real Callawassa news by rewriting it to say that I am in favor of all my employees being citizens, that I am urging them to take out papers, that I am supplying them with books on history and citizenship, that I drew my idea from the company's plan—and then I can go on and explain the company's plan. But the fact that a company a thousand miles away is doing a little welfare work for its employees isn't of particular interest to the people of Callawassa.

Plain Bull

"And neither is it of interest to the people in Callawassa to know that a truck in a city a thousand miles away is working wonders for a brewer or that a four-cylinder Lukercgluke climbed Asparagras Mountain with a load of drunks in 40 minutes. Yet this is the sort of stuff that is being wholesaled out by manufacturers. The newspapers in the dealer's home town like to print any news that concerns him.

"The dealer, however, is in position to boost his own game by getting hold of as much as he can get of this factory publicity and rehashing it into a form that will be real, legitimate news for the home-town papers.

"After this, Tommy, I guess we'll have the factory send us all the dope it gets out and you can consider yourself elected publicity manager of C. J. Reilly, Inc. Your status will be determined by the number of stories you get——"

"There you go!" asserted Tommy. "Trying to cram the newspapers full of your own stuff."

Vanderbilt Cup Race May Come To The East

Ex-Chairmen of A.A.A. Contest Board Form Committee to Consider Ways and Means—Long Island Favored

NEW YORK, Jan. 16—The Vanderbilt Cup race may be brought back to the East. A committee has been appointed to consider ways and means of bringing this about, and if it can be satisfactorily arranged the race may again be run over a Long Island course. The matter first came up for discussion at a luncheon tendered to Dr. H. M. Rowe, president of the American Automobile Association, by Robert Lee Morrell, president of the Metropolitan Consulate of the A. A. A. Later a committee was appointed to consider the possibility of bringing the race East and to make individual investigations concerning conditions which have made it necessary that the race be held on the Pacific Coast. The committee consists of Robert Lee Morrell, Jefferson De Mont Thompson and William Schimpf, all ex-chairmen of the contest board; Richard Kennerdell, present chairman; Frank G. Webb and Robert Graves. To date little progress has been made, though it is confidently expected that with the active co-operation of dealers and factories something of a definite nature may be done in the near future. The committee is to meet again in the course of a week or 10 days.

Bound Brook President Dies

BOUND BROOK, N. J., Jan. 15—William Winsor Smalley, president and treasurer of the Bound Brook Oil-Less Bearing Co., died Dec. 27.

Parent Company Takes Over Fiat

PARIS, FRANCE, Jan. 14 (Special Cable)—The Fiat Co. of Poughkeepsie, N. Y., has been taken over by the home factory of the Fiat Co., Turin, Italy, according to information obtained in Italy a few days ago. The details of the deal are not disclosed, but it is understood that some of the heaviest stockholders in the U. S. A. Fiat factory retain their interest. J. S. Josephs, treasurer, retains his interest. Mr. Josephs is at present in Europe, but sails for America in a day or so.

Picard Takes Over Stromberg in N. Y.

NEW YORK, Jan. 12—A. J. Picard & Co., accessory dealers, will on March 1 take on the Stromberg carbureter, now handled by the Stromberg Motor Devices Co., a factory branch. F. E. Tucker will resume his duties as wholesale manager with the A. J. Picard company.

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More Companies Raise Tire Prices 4 to 25%

General Rise Affects Smaller Sizes the Least—One Maker Makes Reduction

NEW YORK, Jan. 11—More companies have revised tire prices, the increases ranging from 4 to 25 per cent, and one company has lowered its prices. The Republic Rubber Co. has advanced prices 15 per cent on pneumatic casings and 10 per cent on truck tire casings. Michelin has advanced its tubes 10 per cent and on plain and non-skid Ford sizes of shoes it has advanced 12 per cent. An advance of 19 per cent has been made on all shoes ranging in widths from 4½ to 5 in., this increase also effecting the 34 x 4 shoe. The Swinehart company has reduced the price of its 30 x 3½ plain tread from $17.50 to $16.15, the non-skid price remaining unaltered. The 34 x 3½ plain tread has been dropped from $22 to $21.05. In the appended table are all the new prices of companies which have made changes.

Can Re-spring Cars Quickly

CHICAGO, Jan. 11—The Tuthill Spring Co. has increased its production and completed arrangements under which it will be possible to ship replacement springs on short order. A new process has been perfected and new machines installed which make possible the production of springs giving a better fit between leaves than has been possible before. A new stockroom has been constructed and springs for all cars will be kept on hand and can be shipped immediately. Springs which must be made to order can be produced in 48 hours.

Two-Unit Disco Starting and Lighting System

DETROIT, Jan. 9—The Disco Electric Starter Corp. is manufacturing a new type of two-unit starting and lighting system. These machines are of the four-pole type, cylindrical in shape, 5 in. in diameter and approximately 7¼ in. long. Both motor and generator are built up from the same parts, differing only in windings and armature laminations. The units weigh 22 lb. each and are wound for 6 volts only. The motor has a capacity for an engine as large as a four, five or six. Regulation is by means of a Ward-Leonard regulator or similar device, so designed as to automatically lower the charging rate when the battery becomes fully charged.

New Shock Absorber Company

DETROIT, Jan. 12—The Climax Shock Absorber Co. has been incorporated in this State and will manufacture shock absorbers at Benton Harbor, Mich. The company will operate in a plant owned by the Baker-Vawter Metal Co. Officers are: W. A. Vawter, president; John Sterner, vice-president; F. E. Coombs, secretary, and W. A. Vawter, II., treasurer.

Leavitt Gets Harroun and Premier

NEW YORK, Jan. 13—J. W. Leavitt & Co., San Francisco, Cal., completed negotiations at the New York show for the distribution of the Harroun and Premier cars on the Pacific Coast. The Harroun territory will cover California, Nevada and Arizona. The Premier territory will embrace the lower half of that State and practically all of Nevada. The Leach Motor Car Co., Los Angeles, handles the other half of the State and practically all of Arizona.

Selden to Push Truck Attachment

DETROIT, Jan. 15—After 18 months of exhaustive experiments the Selden Mfg. Co. has begun an active, country-wide campaign to introduce the Samson load carrying unit. Its function is to relieve the Ford rear axle of all weight from load when the chassis is converted into a light truck, and to supply a powerful, rigid brace to the Ford springer hangers and wheels. This is accomplished by two strong brackets with their auxiliary springs, and two special ball bearings which assemble on the axle housing.

Day-Elder Is Reincorporated

NEWARK, N. J., Jan. 11—The Day-Elder Motors Co., manufacturer of D-E motor trucks, has been taken over and absorbed by a new company, styled Day-Elder Motors Corp., which has been incorporated under the laws of New Jersey, with a capital stock of $1,000,000. Coincident with the change, Percy K. Hexter, who for the past two years has been Eastern sales manager of the Republic Motor Truck Co., Alma, Mich., has taken a substantial interest in the Day-Elder Motors Corp. and been elected a vice-president, a director and sales manager. The company produces worm-driven trucks of ¾-ton, 1-ton and 1½-ton capacities.

Chevrolet Prices Increase

FLINT, MICH., Jan. 12—The Chevrolet Motor Co. has increased the prices of its products. The Four-90 is now $550, an increase of $90; the eight cylinder model is $1,385.

U. S. Rubber Sales Top $125,000,000 for Year

Company Will Sell $60,000,000 Mortgage Bonds and Retire Many of Its Obligations

NEW YORK, Jan. 13—Negotiations have been completed covering the purchase of $60,000,000 first and refunding mortgage 5 per cent bonds of the United States Rubber Co., to cover all existing bonds and liens upon the properties of the company. By the new financial arrangement Kuhn, Loeb & Co. have begun the formation of a syndicate to underwrite the issue. With them will be associated the American International Corp.

Part of the proceeds from the sale of the bonds will be used to retire $24,697,148 of obligations outstanding of the parent company and subsidiaries. All the existing obligations will be paid on or before Dec. 1, 1918, except $2,600,000 6 per cent gold bonds of the Canadian Consolidated Rubber Co., maturing in 1946, and $9,000,000 debentures of the General Rubber Co., due Dec. 1, 1918. The latter will be left undisturbed for the present as the company has under consideration other plans for dealing with its crude rubber interests.

The company is not to pay any dividend on the common stock other than a dividend in common stock, unless unencumbered quick assets of the company and subsidiaries after deducting therefrom such dividends shall then exceed the aggregate debt of the company and subsidiaries, including outstanding bonds.

Last year's sales of the company and its subsidiaries are estimated at $125,000,000, a new record. Net earnings for 1916 are estimated at $12,500,000, a new high mark.

A Record of Tire Advances Since January 1st

Company		Casing		Tube	
		Old Price	New Price	Old Price	New Price
Republic	30 x 3½	$16.50	$19.00	$3.10	$3 40
	32 x 3	16.25	18.70	2.80	3.10
	36 x 4½	39.05	44.15	5.85	6.45
Michelin	30 x 3½	16.95	18.80	3.35	3.75
	34 x 3½	18.30	20.95	3.85	4.25
	36 x 4½	25.70	42.25	6.90	7.55
U. S.	30 x 3½	12.75	14.80	2.95	3.40
	32 x 3	12.50	13.90	2.75	2.85
	36 x 4½	30.10	35.45	5.70	6.25
Swinehart	30 x 3½	17.50	16.15	3.40	3.40
	34 x 3½	22.00	21.05	3.75	3.80
	36 x 4½	37.50	38.20	6.05	6.60
Firestone	30 x 3½	14.70	16.40	3.20	3.55
	32 x 3	14.75	17.15	3.05	3.45
	36 x 4½	35.35	40.60	6.20	6.90
Fisk	30 x 3½	13.40	14.70	3.30	3.50
	34 x 4½	17.20	21.85	3.65	4.60
	36 x 4½	31.55	34.20	6.40	6.11
Goodrich	30 x 3½	13.40	14.70	2.95	3.05
	32 x 3	13.15	15.10	2.75	3.10
	36 x 4½	31.60	34.20	5.70	5.60
Goodyear Cord	30 x 3½	28.50	32.75	3.85	4.25
	32 x 3½	30.45	35.00	4.00	4.40
	36 x 4½	48.15	55.35	7.45	8.15

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WHAT THE TRADE ASSOCIATIONS *ARE DOING*

Atlanta Trade Organizes

ATLANTA, GA., Jan. 12—The organization of the Atlanta Automobile Association was perfected at a meeting held at the Ansley Hotel on the evening of Jan. 3. In attendance were the representatives of practically every branch house and distributer located in Atlanta, Ga. To George D. McCutcheon was given the honor of heading the association, his election as president being unanimous. Robert H. Martin, of the Southern Oakland Co., was elected first vice-president. R. N. Reed will be second vice-president. The treasurer will be J. W. Goldsmith, Jr. K. T. McKinstry was elected secretary. George W. Hanson and Chas. M. Tway form the directorate. The Atlanta Automobile Association will promote the automobile show for the Southeastern States, opening at the Auditorium Feb. 24, and closing on Saturday night, March 3, which event will be augmented by reason of the Retail Merchants' Association holding an annual "open house" at the same time.

Denver Wants Show Next Fall

DENVER, COL., Jan. 9—Preference for a motor car show next fall instead of this winter has been expressed by the Automobile Trades Association of Colorado in a general vote of the members following a canvass of the show outlook by a special committee recently appointed to investigate the proposition from all angles.

Kentucky Dodge Dealers Dine

LOUISVILLE, KY., Jan. 6—Seventeen Dodge dealers from various counties in Kentucky attended the semi-annual meeting and banquet of the Southern Motors Co., distributers of the Dodge, Hudson and Packard, held Tuesday night at The Seelbach. Short addresses, in which sales conditions were discussed, were made by C. R. Hardy, manager of the concern, and T. P. Bell, of Detroit.

Albany Dealers Elect

ALBANY, N. Y., Jan. 8—The Albany Automobile Dealers have just held their annual election with the following result: President, E. V. Stratton, E. V. Stratton Motors Co., Hudson; Vice-President, Horace Rayno, Boulevard Garage Co., Marmon; Secretary and Treasurer, J. B. Wood.

The president has appointed the following committees: Membership—Horace Rayno, C. D. Hakes, Albany Garage Co., and W. E. Foskett, Albany Hardware & Iron Co.

Entertainment—L. R. Mack, Packard dealer; Harry Sutherland, Reo and Dodge dealer. Other committees, including service, will be appointed later.

The following were elected to the Board of Directors: W. E. Foskett, W. J. Sutherland, William R. Cox, J. S. Kingsbury, J. B. Wood, Horace Rayno and E. V. Stratton. The Board of Directors, in addition to W. A. Carpenter, of the Willys-Overland, and Mr. Hakes, will act as an Executive Committee for the coming Automobile Show to be held Feb. 17-24. The Albany dealers have conducted their own show for the past several years with marked success.

Hawaiian Orchestra for Columbus

COLUMBUS, OHIO, Jan. 12—Arrangements have been completed for the annual Columbus automobile show which will be held at Memorial Hall, Jan. 27 to Feb. 2. In all thirty-six dealers will exhibit about sixty-five different makes of pleasure cars. In addition, quite a few motor trucks will be shown. The show is held under the auspices of the Columbus Auto Show Co., which is composed of representative dealers of the Buckeye capital. One of the features will be a Hawaiian orchestra, which will furnish music during the show.

Do You Want By-Laws?

PINKHAM & WRIGHT, Hillsdale, Mich., have asked Motor World for a constitution and by-laws for an association which is about to be formed in Hillsdale county.

We have sent them a set that was published in the Legal Department of Motor World last March.

The forming of associations is an excellent move and Motor World will be glad to furnish copies of these constitution and by-laws and any advice or suggestions it can give.

Why don't YOU form an association?

Grasser Heads Toledo Dealers

TOLEDO, Jan. 11—Joseph M. Grasser was elected president of the Toledo Automobile Dealers' Association at the annual banquet held last week. Other officers elected were: Vice-president, T. H. Mitchell; second vice-president, Charles Doam; secretary, V. G. Kibby; treasurer, C. L. Sturtevant; trustees, J. W. Banting, Charles P. Landman, E. A. Wilkinson, H. W. Lancashire and R. A. Parker. Practically every firm in the city was represented, there being 54 at the banquet. The association was formed last May.

At Last a Madison Show!

MADISON, WIS., Jan. 16—The Madison Automobile Dealers' Association has selected Jan. 17, 18 and 19 as the dates of the sixth annual motor show to be held in the large new building recently completed by the Union Transfer & Storage Co., King Street. In past years the show has consisted of private exhibits in all salesrooms in the city, and visitors were transported from one to the other free of charge by the respective dealers. This will be the first time that the show has been held under one roof.

Elects Officers for Year

ST. JOSEPH, MICH., Jan. 12—The Anti-Friction Lubricant Co. held a meeting of stockholders this week and elected new officers. These include: J. J. Theisen, president; F. Hildebrand, vice-president; E. P. Clarke, secretary, and B. Rimes, treasurer. The board of directors includes E. P. Clarke, Edward Burton, J. J. Theisen, W. A. Feather and F. Hildebrand.

Lakey Foundry to Expand

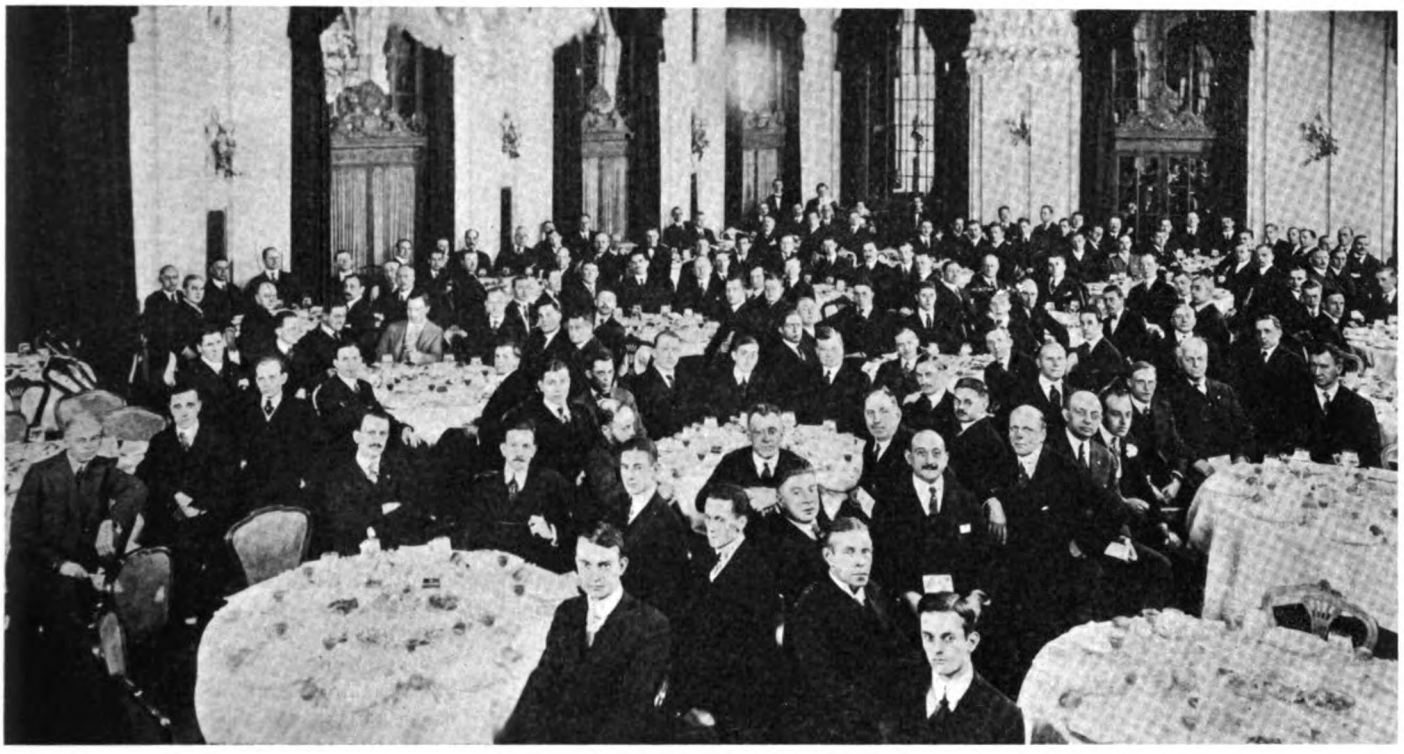
MUSKEGON, MICH., Jan. 12—The Lakey Foundry & Machine Co. plans to triple its capacity for 1917. A new factory building, with 62,000 sq. ft., will be erected, and 200 workers and considerable equipment will be added. The Lakey company will have a capacity of 100 to 120 tons of castings daily when the new plans are completed. The company now employs 300 men.

Increase Capital Stock

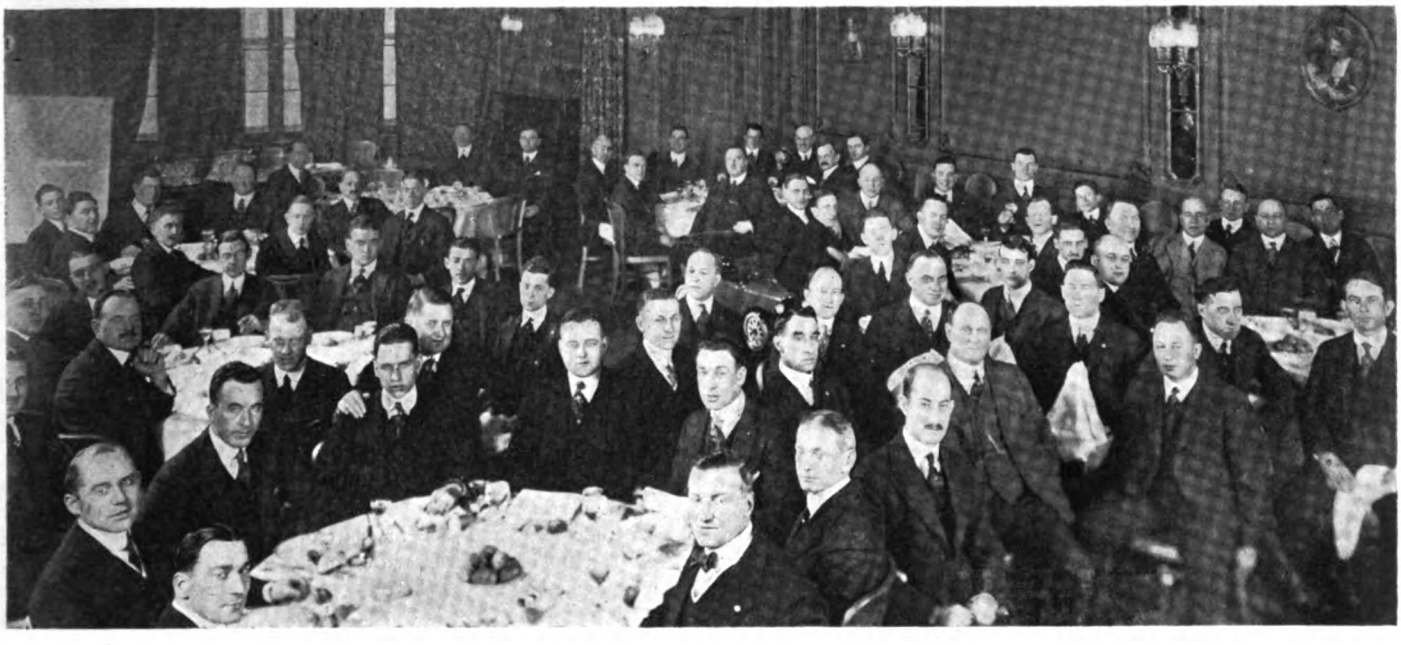
TOLEDO, Jan. 12—The Standard Steel Tube Co. increased its capital stock from $150,000 to $600,000 this week. The increase was made to secure additional working capital. All of the old officers and directors were re-elected.

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Hupmobile and Velie Dealers Dined at New York Show



HUPMOBILE gave a luncheon Thursday of New York show week at the Biltmore to a host of dealers, mostly from the eastern section of the country



VELIE specialized in sales meetings and luncheons. These were given at the Claridge on two different days. The luncheon shown here was Wednesday

Alling Heads New York Dealers

NEW YORK, Jan. 16—E. M. Alling, president of the Automobile Dealers' Association of Rochester, N. Y., was elected president of the Automobile Trade Association of New York State, Inc., at the annual meeting of that body held at the Engineers' Club last Thursday. Other officers elected were: Vice-president, E. V. Stratton, president the Albany Automobile Dealers' Association; treasurer, E. G. Oliver, Hudson-Oliver Co., Buffalo; secretary and general manager, Charles A. Stewart. Among other things, the body discussed pending legislation and agreed to exert its influence against the motor truck fee bill, which would greatly increase registration fees on commercial vehicles. The association tendered a standing vote of thanks to retiring President R. H. Johnston, manager of the New York branch of the White Co., for his efforts in organizing the body and for his work as president during the last 3 years.

To Combine Empire and Pathfinder Agencies

INDIANAPOLIS, IND., Jan. 15—The final working out of the details of the recent merger of the Empire Automobile Co. and the Pathfinder Co. is being completed in New York by Boughton & Co., who are financing the scheme. According to plans, it will be a policy of the new company to combine, in as many cases as possible, both the Empire and Pathfinder cars under one roof in the various cities. As was stated last week, the Federated Motors Co. is being formed with W. C. Teasdale as president. W. E. Stalnaker is vice-president and W. K. Bromley secretary.

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Milwaukee Show Boosts Winter Business

Distributors Concentrate on Perfecting Organizations and Getting Prospects—70,000 Persons See The Show.

Milwaukee, Jan. 11.—"Getting prospects" doubtless is the most tangible result obtained by exhibitors at the ninth annual Milwaukee show, which closed tonight, just as it has been at every past show. This is the consensus of opinions of retail dealer-exhibitors. The distributors count as the principal benefit derived from the show the opportunity of extending their organizations, getting new dealers, and fixing more definitely the whole scheme of distribution under contracts previously made. Putting the two results together, the Milwaukee show has justified its existence for nine consecutive years without prejudice and grows more popular among tradesmen year after year.

The Milwaukee show was built upon the idea of furnishing an all-around impetus to the motor car industry at midwinter, when, if ever, interest in motor cars is "off-peak." It is much more than a Milwaukee show, for its very structure is that of the State of Wisconsin and the Upper Peninsula of Michigan, which territories receive practically their entire motor car supply through Milwaukee. It brings to Milwaukee from 700 to 1200 Wisconsin dealers and several thousand sightseers. The city of Milwaukee furnishes the rest of the attendance, which this year attracted a total of 70,210 people, according to the turnstiles at the Auditorium gates.

The Milwaukee Automobile Dealers, Inc., and its predecessor, the Milwaukee Automobile Dealers' Association, are responsible for this show, as well as the last six shows. The credit for introducing the motor-show idea in Milwaukee belongs to the Milwaukee Automobile Club, which in March, 1909, staged the first exposition in the Hippodrome, then the largest available show building. The club likewise held the second show, in January, 1910. But thereafter the management and promotion of the show was reserved by the M. A. D.

Ruddle Is Milwaukee's "Sam Miles"

Bart J. Ruddle, assistant secretary and manager of the M. A. D., is Milwaukee's "Sam Miles." The association annually appoints a show committee of three members, which works long and hard, but for the most part the detail is left to Ruddle. He has handled every one of the seven shows conducted by the M. A. D. The 1917 show committee consists of N. E. Osmond, chairman, A. W. L. Gilpin and Leslie D. Frint.

The M. A. D. leases the Auditorium for 1 week at a lump rental of $2,500 for the entire building, which covers practically a solid block and consists of an immense main arena, two smaller halls and spacious corridors and lobbies on the main floor, a large basement, and two halls on the second floor. Ordinarily the rental of the main arena for one night is $500. The M. A. D. also gets the use of the basement for 1 week preceding the show at a nominal fee of $25. The contract for the building gives occupancy at midnight on Wednesday, and requires that the building must be completely evacuated by midnight of the following Thursday, in this year's case being from Jan. 3 to 11. The reservation usually is made a year ahead in option form.

Main-Floor Spaces Cost $200

The unit space for exhibitors is 20 x 20 ft. in size and is sold at the rate of $200 for main-floor space and $100 for basement space. The unit cost of space at the annual State Fair show, the M. A. D.'s fall show, is $125. After exhibitors sign contracts for the space or spaces required they draw for position. This year the demand for space was so great that in the drawing charter members of the M. A. D. were given first chance and newer members second choice, the outsiders taking what was left. The official membership of the M. A. D. is forty-five and the total number of exhibitors runs well above 140.

The M. A. D. provides a uniform decorative scheme for the entire building, even to a uniform placard to designate the name of the exhibitor. Exhibitors are not permitted to elaborate upon this scheme in any manner. The management provides even the small placards attached to show cars to indicate model and price. This plan is universally satisfactory, and permits no exhibitor to take an advantage over another by making his booth super-attractive.

The M. A. D. spent a little more than $3,200 for the decorative scheme this year. Entertainment is provided by a military band stationed in the main arena, a five-piece orchestra in the main lobby to serve the two smaller halls, and another quintet in the basement.

"Style Show" an Added Feature

Two new features were introduced at this year's show. One was a "Style Show," by arrangement with the Gerretson Co., Milwaukee, one of the leading women's wear houses, and the other was a complete motion picture show, put on at association expense as a free feature. The style show was held twice daily, and imported models paraded upon a raised platform running across the main arena above the main passageway from 3.30 to 4 o'clock p. m. and from 9.30 to 10 p. m. The success of this feature is yet to be determined.

While no exhibitor has complaint to make against the idea, it was very evident that almost every person in the building thought of nothing but the new styles and the pretty young ladies who wore them for at least a half-hour each afternoon and a half-hour each evening.

The movies were put on in one of the second-floor halls of the Auditorium and admission was free. The reels were of a varied nature. Several motor car factories loaned their advertising reels showing factory operations. Comic and dramatic reels were leased at regular fees from the film exchanges. The performance was continuous from 10.30 a. m. to 10.30 p. m., and hundreds of visitors attended.

Where Will We Go Now?

The unusually large requirement of show space this year has created a serious question with respect to the accommodation of future shows under one roof. The limit of elasticity in the Auditorium practically has been reached. There is no other suitable building for an overflow show in the vicinity. Some relief will be afforded by the decision of the Auditorium board of managers to excavate the entire basement. At this time the arena proper rests on a soil foundation. If this is removed and the arena supported by columns, about 6000 sq. ft. of floor space will be provided in the basement.

This year's attendance shows an increase of more than 60 per cent over 1916, which had been the record year up to that time. Official figures for the 1916 show were 40,956. With the last day's attendance this year estimated, the total is 65,812. The Sunday attendance was

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especially large, showing an increase of more than 100 per cent over last year. Comparative attendance figures follow:

	1917	1916
Friday	7,706	4,127
Saturday	8,765	5,736
Sunday	12,591	6,414
Monday	9,137	4,190
Tuesday	11,413	7,989
Wednesday	9,224	6,520
Thursday	10,423	5,980
Total	70,210	40,956

*Estimated.

Ticket Sale Exceeds 33,000

More than half of the visitors paid admission of 50 cents. Ticket sales exceeded 33,000. This figure is "boosted" to some extent by the purchase of $40 worth of tickets at 50 cents each by each member of the M. A. D. This meant a sale of 3600 tickets and a revenue of $1,800 before the doors opened.

It is almost impossible to obtain definite figures of actual sales made at the show. As a rule retail dealers find that the main function of the show is to give them a select list of names of good prospects for spring sales, rather than to induce actual car selling. It is true, however, that enough business is transacted by exhibitors to more than offset the expense of making the exhibit.

To create additional interest, each day of the show is especially designated. Thus the opening day was "Motor Industry Day"; the second, "Milwaukee Automobile Club Day"; the third, "Interurban Day"; the fourth, "Wisconsin Good Roads Day," upon which all paid admissions were turned over to the Wisconsin Good Roads Association; the fifth, "State Dealers' Day"; the sixth, "Merchants' and Manufacturers' and Society Day"; the seventh, "Milwaukee and Grant Six Day." Each paid admission included a coupon, and on the last day a Grant Six was given away.

Wisconsin Wants 38,500 Cars in 1917

Which Is an Increase of 33⅓%—Era of Prosperity Sweeping Over State

WISCONSIN'S SOARING REGISTRATIONS

	1916	1915	1914	1913	1912
Motor cars	115,650	79,791	53,160	34,646	24,578
Gain per cent over preceding year	44	50	53	45	....
Motor car dealers	1,970	1,583	1,202	1,393	1,052

MILWAUKEE, WIS., Jan. 16—That Wisconsin will absorb at least 38,500 cars during 1917 is the confident belief of the largest distributers in the State, who are backing up their belief by contracting for that many cars for delivery during the new season.

During 1916 Wisconsin absorbed 35,860 cars, making a total of 115,650, or a ratio of one car to every twenty-five persons on a basis of estimated population of 3,000,000. The gain in 1916 compared with the previous year was 44 per cent. In estimating that the 1917 demand will be at least 38,500 cars, distributers count upon an increase of 33 1/3 per cent, which appears to be nothing less than conservative when it is considered that past gains have hovered around the 50 per cent mark with much consistency.

Naturally enough, the probable ability of the people of Wisconsin to buy cars this year furnished food for much discussion among the hundreds of distributers, dealers and sub-dealers who attended the ninth annual Milwaukee show this week. Estimates made by ten of the largest distributers varied only a thousand or two. The lowest estimate of the number of cars that will be sold was 37,500 and the highest was 40,000. A few ultra-enthusiasts estimated as high as 50,000, explaining that Ford alone expects to put 30,000 new cars into the Badger State.

Great Era of Prosperity

There is no question concerning the fact that the people of Wisconsin are enjoying the greatest era of prosperity in the history of the State. The total banking power of the commonwealth has increased $82,000,000 in 1 year, according to definite statistics gathered by the State Commissioner of Banking, and now stands at the stupendous total of $552,177,175. During 1916 bank deposits increased $43,424,626. A decrease of $575,165 in rediscounts and bills payable is evidence of the prosperous conditions existing throughout the State. A general policy of conservatism is indicated by the increase from 21 per cent to 22.7 per cent in the average reserve held by State banks.

To prove that Milwaukee, metropolis and trade center of Wisconsin, is prosperous it need only be said that bank clearings for the first time in history exceeded $1,000,000,000 during the past year. The exact figure of the total clearings is $1,047,716,296, and in 1915 they were $835,000,000.

This Is Wisconsin's Motor Show

The Milwaukee motor show is, in truth, the Wisconsin motor show, for practically every car which is sold in this State passes through the hands of Milwaukee distributers, either in fact or on paper. For the most part the Upper Peninsula of Michigan is Milwaukee territory, although some factories prefer to handle the Peninsula through the Michigan distributers. Some lop off the "bulge" in topography in northwestern Wisconsin and give is to Minneapolis distributers. At one point Minneapolis-St. Paul is only 15 to 20 miles from Wisconsin.

The Milwaukee show—or rather the winter show, for the State fair exposition in fall is very important—brings from 600 to 1000 dealers and sub-dealers to this city. Show week is the time when distributers call in their representatives for "get-together" meetings, banquets and conventions. Up to and including the last winter show the Milwaukee Automobile Dealers, Inc., which conducts the exposition, has given a banquet on the night before the closing, in honor of Wisconsin dealers. The attendance usually was about 600, but it was limited only by the inability to obtain a larger banquet hall and doubtless more would have been present if they could have been accommodated. This feature was abandoned this year because of the fact that practically every distributer entertained his own dealers privately and the general banquet would be more of a duplication of effort and expense than ever.

A Great Business Gathering

One day of the show is set aside as "State Dealers' Day," but the dealers come and go on every day, while many remain several days. To bring prospective customers is the exception rather than the rule. The dealers come to the show mainly to talk business, get advice, see to it that their allotments are not disturbed, tell their distributers what conditions are at home, and look over the latest models. It is surprising how many dealers come here during the show with the avowed purpose of having their allotments increased. Contract time is in early fall, and by January, or showtime, the dealer usually finds that he has not asked for enough cars to supply his demand. This year is no exception.

Rudolf Hokanson, president of the Hokanson Automobile Co., Madison, Wis., a large distributer of Buicks under the Milwaukee branch of the Buick Motor Co. and State distributer of Oaklands, said at the show that Madison dealers

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sold 8537 cars during 1916, compared with 2320 in 1915. These same dealers have contracted for 11,088 cars for 1917. Hokanson's company sold 1105 Buicks in 1915 and 1100 in 1916, and asks 1600 in 1917. Its State business on the Oakland last year was 1400 cars, and for 1917 it has contracted for 2600 cars.

Badger State Has 2000 Dealers

The total number of dealers in Wisconsin, as indicated by the registration and license figures of the Secretary of State, increased during 1916 from 1583 to 1970, a gain of 387. This means that there are approximately 2000 motor car dealers in the Badger State. There was a decided drop in the number of dealers in 1914 compared with 1913, the loss being 191; but in 1915 a gain of 381 was made, and this gain practically was duplicated last year.

Every dealer in Wisconsin sold on an average of eighteen cars during 1916, figuring that 1970 dealers were responsible for 36,000 sales.

In figuring probable business for the new year it always is interesting to follow the estimates made by the Secretary of State's office for the purpose of contracts for supplies of license plates. For 1916 the State contracted for 110,000 sets of plates for private owners and 1600 sets of "star" plates for dealers. Long before the end of the year hurry calls were sent to the contractor for additional plates. The estimate of 110,000 happened to be just 5650 short of requirements, and the estimate of 1600 was 370 short. In contracting for 1915 plates the Secretary of State figured that 75,000 sets would go around, but by the close of the year he needed 4971 additional sets for private owners.

Gas Up in New Jersey and Pennsylvania

NEWARK, N. J., Jan. 15—Gasoline has been advanced 1 cent in New Jersey and 2 cents per gallon in Delaware and Pennsylvania. The tank-wagon basis in New Jersey is now 21 cents, while in the other two States it is 23 cents. It is stated that indications point toward an increase in the Metropolitan district within the next week, owing to the increase in the price of crude oil.

Smith-Form-a-Truck Perfects Distribution Plan

CHICAGO, Jan. 16—The Smith-Form-a-Truck Co. has completed its plan of distribution and will divide all territory into a number of major blocks, each under a manager with subdivision under from four to eight factory representatives and service managers. Eugene Elliott, formerly production manager for the Haynes Automobile Co., Kokomo, has been appointed general Eastern sales manager and A. F. Johnston, formerly sales manager of the Automatic Carbureter Co., has been made general West- of Mississippi will be divided into ern sales manager. The territory east twenty-four major divisions.

Baltimore Ford Dealers Form Cooperative Body

Will Ask Ford Factory to Divide Prospects' Names Equally Among Dealers

BALTIMORE, MD., Jan. 15—Following the lead of a number of cities, the dozen Ford agents of this city met last week and organized the Ford Dealers' Association of Baltimore. C. E. Hosbach, of the Hosbach Motor Co., who served as temporary chairman, was elected president of the body; William Tickner, of William J. Tickner & Sons, vice-president; C. Raymond Schmidt, of the Hosbach company, secretary, and George E. Brown, of Wilcox, Brown Co., treasurer.

The body immediately appointed committees on organization and by-laws, and a meeting will be held next Tuesday night to discuss various matters pertaining to the coming show.

The body sent a letter to the Ford company in which they asked that all prospects be divided equally between all of the city dealers. The plan of the Ford company is to hand over prospects to the dealers located in the sections of the prospects. This, the dealers' association thinks, is unfair.

A. A. Grisham, manager of the Ford company, and Carl E. Harig, assistant manager, made brief addresses on the subject of organization.

The dealers also asked Grisham to submit to them a basis for the hourly service charge in garages, and with this done all of the dealers will have a fixed charge for Ford repairs.

Cooperation in Bloomington

BLOOMINGTON, ILL., Jan. 15—The recently organized Bloomington Automobile Trade Dealers' Association and the McLean County Automobile Club will cooperate to put on the annual automobile show in Bloomington. In previous years, when the dealers were without an organization, the club took charge of the exhibit and utilized the profits for improving the roads, marking trails and other purposes. This year the club will be in charge as usual, but the dealers will be placed upon the committees and a portion of the profits will be placed to the credit of the dealers' treasury. The dealers individually have been asked to contribute to all sorts of public enterprises, good, bad and indifferent, and there has been a perpetual hold-up. Hereafter all requests for contributions will be referred to a committee of the dealers to investigate and if found worthy a contribution will be appropriated from the association treasury. This method, it is believed, will save each dealer the cost of his membership in the association at least, and perhaps a larger sum, each year. It was voted to stage this year's show from Feb. 21 to 24 in the Deere Building, the same place secured for last year's show. It is planned to purchase some of the decorations used in the Chicago show for the Bloomington display.

Baltimore to Refuse Used Cars

BALTIMORE, MD., Jan. 15—A movement is on foot in this city by several dealers to handle the used-car situation from another angle. The dealers are trying to get sufficient of their number to stand together and not take any used cars in trade when making a sale. They plan to auction off used cars and let the owner take what he can get for his car.

Service for 30 Days in Fort Wayne

FORT WAYNE, Jan. 15—Motor car owners here will no longer receive free service for an indefinite period. Members of the Fort Wayne Automobile Dealers' Association have agreed to limit free service to a period of 30 days above the 90 days given in the manufacturer's guarantee. For all service rendered after the 30-day free-service period owners will have to pay.

Atlanta Dealers Organize

ATLANTA, GA., Jan. 15—The get-together movement of the Atlanta automobile dealers to arrange for the show that will be opened in the Auditorium the week of Feb. 24 has resulted in the organization of the Atlanta Automobile Association with practically every dealer and branch house in the city as members. The organization meeting was held at the Ansley Hotel. The following officers were elected: President, George D. McCutcheon, manager Buick branch; first vice-president, Robert H. Martin, of the Southern Oakland Co.; second vice-president, R. N. Reed; treasurer, J. W. Goldsmith; secretary, K. T. McKinstrey. These officers with George W. Hanson and Charles W. Tway form the directorate. For the present the association will devote its attention to pushing their First Annual Show. It is assured that all of the 19,000 sq. ft. of flooor space will be taken.

Elgin Officers Reelected

ELGIN, ILL., Jan. 15—All the officers of the Elgin Motor Car Corp., Chicago, were re-elected at the annual meeting of stockholders held Jan. 9. The officers reelected were: President, Frederick L. Brown; vice-president and general manager, C. S. Rieman; secretary and treasurer, W. G. Knoedler.

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Truckmobile Is Latest Ford Truck Attachment

Attaches and Detaches in Brief Time and Sells for $350—Made by Chicago Company

CHICAGO, Jan. 13—The Truckmobile, made by the Commercial Truckmobile Co., 1606 Michigan Avenue, Chicago, is a unit for converting the Ford chassis into a 1-ton truck. It is a chain-driven design, giving a longer wheelbase, 133 in., and wider frame, 41½ in. These features give not only greater loading space but also, it is said, easier riding and steering and less sidesway.

Great stress is laid on the placement and suspension of the side springs, for they are not suspended from the side of the frame, as is usual, but directly under the frame side members.

Attention is also called to the method of using the Ford rear axle as a jackshaft. The axle is not altered in any way. The bell sprockets are simply keyed in place the same as the Ford wheels. At any time the truck unit may be removed and the car made into a pleasure car again. The price is $350, and immediate deliveries can be made.

Wants Change in Delaware Laws

WILMINGTON, DEL., Jan. 15—In his annual message to the Delaware legislature, which was read before that body last Thursday, Charles R. Miller, the retiring governor, recommended changes in the motor vehicle laws forbidding glaring headlights and a single center light in front; that all motor vehicles with fixed tops or tops raised be required to carry a mirror to show cars approaching from the rear; that all vehicles using the highways at night be required to carry lights; more drastic penalties for the theft of automobiles; making it a misdemeanor, with forfeiture of office, for a constable to receive money from persons for alleged violation of the motor vehicle laws prior to a hearing in court; that dealers' license fees be increased; that fractional licenses at one-half the annual fee be issued after Sept. 1; thoroughly uniform reciprocity laws with other States.

N. A. C. C. Men Off to Shows

NEW YORK, Jan. 17—Sam Miles, manager of the national shows, left for Chicago to-day to superintend the Chicago show. Alfred Reeves, general manager of the National Automobile Chamber of Commerce, will leave later in the week and from Chicago will go to San Francisco in response to the invitation of the show managers of that city that the N. A. C. C. be represented at their exhibition.

Goodyear Has Cord Truck Tires

NEW YORK, Jan. 12—The Goodyear Tire & Rubber Co., Akron, has introduced a line of cord pneumatic truck tires for use in long hauls and interurban work. The company has for some time been making pneumatic truck tires of fabric construction. The cord tires for trucks are not a specially constructed tire, but represent simply the application of this principle to tires made in the proper sizes for truck use. In the method of construction they are identical with the cord tires for passenger cars. They come in the All-Weather black tread, and are made in sizes 36 x 6, 38 x 7, 40 x 8, and 42 x 9, with ten to sixteen plies of cords, according to the size of the tire. The prices are a little higher than similar sizes in solid tires.

Several Agency Changes Made at New York Show

Pathfinder, Hal, Auburn and Peerless Involved in Business Alterations

NEW YORK, Jan. 15—Following the New York show a number of changes have been made in agencies and several new dealers have been appointed.

The Pathfinder Co. of New York has been formed to handle the Pathfinder, and offices and salesroom have been established at 1620-24 Broadway. J. P. Hilands is president and general manager of the company.

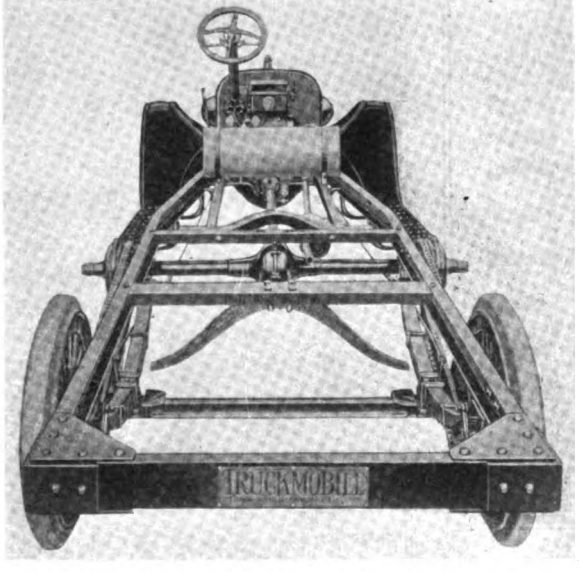
The Hal is to be handled by the Jennings Motor Sales Co., which has opened a salesroom at 1891 Broadway. It is in charge of E. R. Hollender.

The Auburn will be handled by F. W. Wright, Inc.; offices and salesrooms have been located at 1793 Broadway. The company includes F. W. Wright, J. W. Gothard and W. S. Maltby.

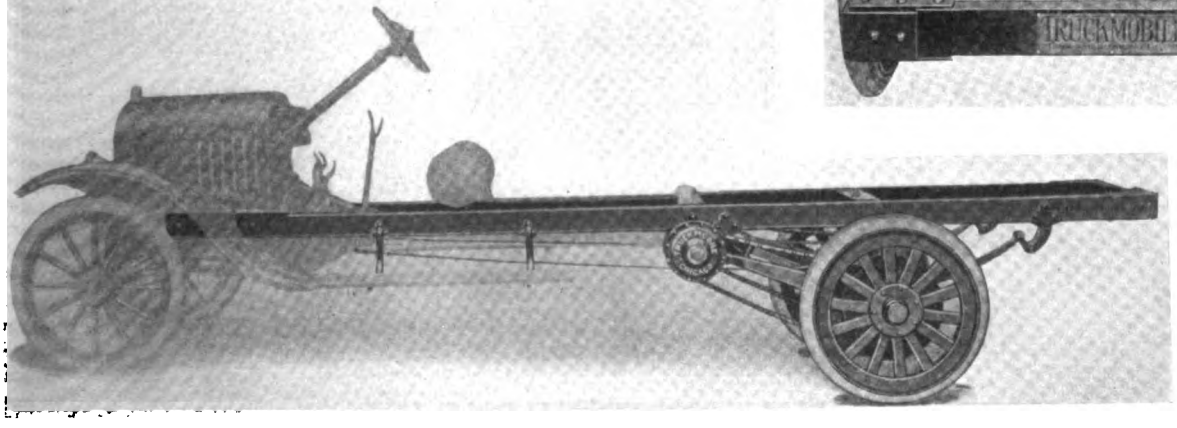
The Peerless will be handled in Brooklyn, N. Y., by the L. A. D. Motors Corp. The company will distribute in Kings and Queens counties.

Nash Re-Elects Retiring Directors

BALTIMORE, MD., Jan. 11 — The stockholders of the Nash Motors Co. at their annual meeting re-elected the retiring board of directors and approved the annual report.



This shows the construction of the Truckmobile and also the supplementary spring which bears on the axle. The Ford axle is used without change, sprockets taking the place of the wheels



Appearance of the Truckmobile when attached to the Ford chassis

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Specifications of the Leading Cars

MOTOR WORLD GUIDE

Revisions Are Made in Table Every Week

Model	Motor	S. A. E.	Ignition	Carbureter	Starter	Clutch	Gearset	Wheelbase	Tires	Rims	2-Passenger	5-Passenger	7-Passenger	Coupe	Sedan	Limousine	Detachable Top
ABBOTT																	
6-44	6-3½x4½	25.3	Remy	Stmbg	Remy	DP	3	122	32x4	SS	1195	†1250	1195	1495	1820	...	....
ALLEN																	
Classic	4-3⅜x5	22.5	Wsths	Stmbg	Wsths	C	3	112	32x3½	SS	850	850	†850	1175	....	....	1195
AMERICAN-SIX																	
A	6-3 x5	21.6	G & D	Zenith	G & D	D	3	122	32x4	SS	...	1285	....	....	....	....	....
AMS-STERLING																	
17	4-3½x4½	15.6	Bosch	Stmbg	Bosch	DP	3	110	30x3½	SS	....	....	....	....	....	....	....
ANDERSON																	
Six-40	6-3½x4½	25.4	Wsths	Own	Wsths	DP	3	120	33x4	SS	1275	1250	*1250	....	....	....	....
APPERSON																	
6-17	6-3½x5	29.4	Remy	Rafld	Bijur	DP	3	130	34x4	SS	1750	....	1750	....	....	....	....
8-17	8-3½x5	31.2	Remy	Rafld	Bijur	DP	3	130	35x4½	SS	2000	....	2000	....	....	....	....
ARBENZ																	
	4-3½x5	16.9	Conn	Carter	Disco	C	3	108	30x3½	C	....	675	....	..	. .	..	....
AUBURN																	
6-39	6-3½x5	23.4	Remy	Rafld	Remy	DP	3	120	34x4	SS	1145	1145	†1145	....	....	....	1320
6-44	6-3½x5½	29.4	Delco	Rafld	Delco	DP	3	131	35x4½	SS	....	†1535	1535	....	....	....	1785
AUSTIN																	
Hy-King	2-2½x5	39.7	Delco	Stmbg	Delco	D	6	142½	34x4½	SS	3750	3750	3750	4550	4950	5250	....
BIDDLE																	
D	4-3½x5½	22.5	Dixie	Zenith	G & D	DP	4	122	32x4	QD	2200	2350	†2275	....	....	3800	3900
BOUR-DAVIS																	
17	6-3½x4½	25.3	G & D	Stmbg	G & D	DP	3	118	32x4	QD	....	1250	....	....	....	....	....
BREWSTER																	
	4-4x5½	25.6	Bosch	Zenith	U. S. L.	C	3	125	34x4½	SS	†6500	....	....	....	7500	7700	....
BRISCOE																	
B4-24	4-3 7/16x5½	16.3	Conn	Mayer	Splitdorf	C	3	105	30x3½	QD	685	685	†685	....	....	....	....
8-38	8-3 x3½	28.8	Remy	Zenith	Apleo	C	3	114	32x3½	QD	‡985	985	....	....	....	....	....
4-38	4-3 7/16x5½	18.9	Remy	Mayer	Apleo	C	3	114	32x3½	QD	‡785	785	....	....	....	....	....
BRUNSWICK																	
	4-4½x5½	36.1	Bosch	Rafld	Wsths	..	3	....	..	....	....	....	1950	....	....	....	....
BUICK																	
D4 34																	
D 4–35	4-3½x4½	18.2	Delco	Marvel	Delco	C	3	106	31x4	C	660	675	....	....	....	....	....
6-44–45-46-47	6-3½x4½	25.3	Delco	Marvel	Delco	C	3	115	34x4	SS	1040	1070	‡1440	....	1835	....	....
CADILLAC																	
55	8-3½x5½	31.2	Delco	Own	Delco	D	3	132 / 125	36x4½	SS	†2240	2240	2240	2960	....	3760	2835
CASE																	
T-17	4-3½x6	21.0	Conn	Rafld	A-Lite	C	3	120	34x4	QD	†1190	....	1190	....	....	....	....
CHALMERS																	
6-30	6-3½x4½	25.4	Remy	Stmbg	Wsths	DP	3	115 / 122	32x4	SS	1230	1250	1350	1440	1850	2550	....
CHANDLER																	
17	6-3½x5	27.3	Bosch	Rafld	G & D	D	3	123	34x4	SS	†1395	...	1395	1995	1995	2695	1995
CHEVROLET																	
4-90	4-3 11/16x4	21.7	Conn	Zenith	A-Lite	C	3	102	30x3½	C	490	490	....	....	....	....	....
F5-F2	4-3 11/16x4	21.7	Conn	Zenith	A-Lite	C	3	112	32x3½	SS	800	800	....	....	....	....	....
D	8-3½x4	36.45	Conn	....	A-Lite	C	3	120	34x4	SS	1385	....	....	....	....	....	....
COLE																	
8-60	8-3½x4½	39.2	Delco	Stmbg	Delco	C	3	127	35x4½	SS	†1695	....	1695	....	2295	2295	2195
CROW-ELKHART																	
CE-35	4-3½x5	19.6	Conn	Zenith	Dyneto	DP	3	114	32x3½	SS	†825	795	....	....	....	....	935
DANIELS																	
8	8-3½x5	33.8	Wsths	Zenith	Wsths	D	3	127	34x4½	QDR	†2600	....	2800	....	....	4000	....
DAVIS																	
H & I	6-3½x4½	25.3	Delco	Stmbg	Delco	C	3	119	34x4	....	1195	1195	1195	1595	1795	....	1995
J	6-3½x5½	29.4	Delco	Stmbg	Delco	C	3	124	34x4½	....	....	1495	1495	....	....	....	....
DETROITER																	
6-45	6-3½x4½	25.3	Conn	Ball	A-Lite	D	3	119	33x4	SS	‡1195	1195	....	1373	....	....	1398
F	4-3½x4½	22.5	Dixie	Schebler	Dyneto	D	3	112	33x4	SS	....	985	....	....	....	....	....
DISPATCH																	
G	4-3½x5	22.5	Bosch	Rafld	U.S.L.	D	4	120	36x3½	....	1135	1210	....	1400	....	....	....
DIXIE FLYER																	
1917	4-3½x5	16.9	Conn	Carter	Dyneto	C	3	112	32x3½	SS	†795	795	....	....	....	....	....
DODGE BROTHERS																	
DORRIS	4-3½x4½	24	Delco	Stewart	N.E.	D	3	114	32x3½	S	785	785	...	950	1185	.	950

Model	Motor	S. A. E.	Ignition	Carbureter	Starter	Clutch	Gearset	Wheelbase	Tires	Rims	2-Passenger	5-Passenger	7-Passenger	Coupe	Sedan	Limousine	Detachable Top
LIBERTY																	
6	6-3½x4½	23.4	Delco	Rafld	Delco	DP	3	115	32x4		†1095	1095	....	....	1295	....	....
LOCOMOBILE																	
R-7	6-4½x5	43.3	Eismn	Ball	Wsths	DD	4	133	37x5	QDC	†4750	*4600	4600	....	....	5600	....
M-7	6-4½x5½	43.6	Eismn	Own	Wsths	DD	4	142	37x5	QDC	*5400	....	5400	....	....	6500	....
LOZIER																	
84	4-4½x6½	28.9	Bosch	Stewart	G & D	D*	4	120	36x4½	SS	....	....	1695	....	....	....	....
82	6-3½x6	36.0	Eismn	Rafld	G & D	D	3	132	36x4½	SS	....	....	2775	....	....	....	....
LUVERNE																	
17	6-3½x5	33.7	Bosch	Schebler	Bosch	DD		132	35x4½	SS	....	....	1500	....	....	....	....
MADISON																	
4	6-3½x5	23.4	Remy	Rafld	Remy	DD	3	120	34x4	SS	....	....	....	....	....	....	....
	6-3½x5	23.4	Remy	Rafld	Remy	DD	3	115	34x4	SS	1050–1150	....	....	....	....	....	....
	6-3½x5	23.4	Remy	Rafld	Remy	DD	3	124	34x4	SS	†1150	(1150) (1250)	1150–1250	....	....	....	....
MAIBOHM																	
A	4-3½x4	15.6	A.Kent	Zenith	Disco	DD	3	105	36x3½	SS	695	....	....	....	....	....	....
MAJESTIC																	
M	8-3 x5	28.8	A.Kent.	....	R & M	DP	3	125	32x4	....	†1500	1650	1650	....	....	....	....
A	8-3½x5	33.8	A.Kent	....	R & M	DP	3	135	35x5	....	†3000	3000	3000	....	....	....	....
MARION HANDLEY																	
6-40	6-3½x5	23.4	Wsths	Stmbg	Wsths	DD	3	120	32x4	SS	†1275	....	1275	....	....	....	....
6-60	6-3½x5½	29.4	Wsths	Stmbg	Wsths	DD	3	125	35x4½	SS	....	....	1475	....	....	....	....
MARMON																	
34	6-3½x5½	33.7	Bosch	Stmbg	Bosch	C	3	136	34x4½	QD	††3100	3050	3100	....	4100	4500	....
MAXWELL																	
25	4-3¾x4½	21	Sims	K-D	A.Kent	C	3	103	30x3½	C	620	635	....	865	985	....	....
McFARLAN																	
	6-4½x6	48.6	Bosch	Stmbg	Wsths	DP	3	136	35x5	QDR	3750	3800	3500	....	....	....	....
MERCER																	
22–73	4-3½x6½	22.5	Bosch	Corser	U.S.L.	DD	4	132	34x4½	QDC	†3500	*3500	..	....	....	....	....
22–73	4-3½x6½	22.5	Bosch	Corser	U.S.L.	DD	4	115	32x4	QDC	3400	Raceabout, 3250	..	....	....	....	....
METZ																	
25	4-3¼x4	24	Dixie	A.W.T.	G & D	F		108	32x3½	C	545	545	....	....	....	....	....
MITCHELL																	
D-40	6-3½x5	25.4	Conn	Rafld	Splitdorf	C	3	120	32x4	SS	1050	1050	....	....	....	....	....
C-42	6-3½x5	29.4	Conn	Rafld	Wsths	C	3	127	34x4	SS	‡1325	1325	1360	1850	1985	2650	....
MOLINE-KNIGHT																	
C	4-3½x5	22.5	Conn	Schebler	A-Lite	C	3	118	34x4	SS	†1450	1450	....	....	....	....	....
G	4-4 x6	25.6	Conn	Schebler	A-Lite	C	3	122	35x4½	SS	†1750	....	1840	2400	2350	....	....
MONARCH																	
	8-3 x5	28.8	A.Kent	Zenith	....	D	3	125	35x4½	....	....	....	1500	....	....	....	....
MONITOR																	
C-R	4-4½x4½	22.5	Heinse	Schebler	Heinse	D	3	108	32x3½	SS	795	795	....	....	....	....	....
N-O	6-3½x4½	25.4	Heinse	Stmbg	Heinse	D	3	115	33x4	SS	995	995	....	....	....	....	....
MONROE																	
M-3	4-3 x4½	14.4	Conn	Zenith	A-Lite	DD	3	96	30x3	DC	565	....	....	....	965	....	....
M-4	4-3½x4½	16.9	Conn	Zenith	A-Lite	DD	3	115	32x4	DC	....	935	....	....	....	....	....
MOON																	
6-43	6-3½x4½	25.3	Delco	Rafld	Delco	DD	3	118	32x4	SS	‡1295	1295	....	....	....	....	1450
6-66	6-3½x5½	29.4	Delco	Rafld	Delco	DD	3	125	35x4½	SS	†1650	....	1650	1690	2250	....	....
MURRAY																	
70-T	8-3½x5	33.8	Dixie	Zenith	Wsths	DP	3	123	34x4½	..	2500	....	2500	....	....	Chassis	2000
NATIONAL																	
Hzy	6-3½x5½	29.4	Dixie	Rafld	Wsths	C	3	123	34x4½	QDR	†1750	....	1750	2490	2350	....	....
Hzy	12-2½x4½	39.63	Delco	Rafld	Bijur	C	3	128	34x4½	QDR	†2150	....	2150	2300	2750	....	....
NELSON																	
	4-3½x4½	15.6	Bosch	Zenith	U.S.L.	D	3	104	32x4	SS	....	....	....	....	2200	....	....
OAKLAND																	
34	6-2½x4½	18.9	Delco	Marvel	Delco	C	3	112	32x4	SS	‡ 875	875	....	....	....	....	995 / 1020
50	8-3½x4½	39.2	Delco	Stmbg	Delco	C	3	127	34x4½	SS	....	....	1535	....	....	....	....
OLDSMOBILE																	
45	8-2½x4½	26.4	Delco	Johnson	Delco	C	3	120	33x4	SS	1295	1295	....	....	1850	. .	1775
OVERLAND																	
85–4	4-4½x4½	27.2	Conn	Tltsn	A-Lite	C	3	112	32x4	SS	835	850	....	1250	1450	....	....
85–6	6-3½x4½	25.3	Conn	Tltsn	A-Lite	C	3	116	32x4	SS	970	935	....	1385	1585	....	....
OWEN																	
M-25	6-3½x5½	29.4	Bosch	Zenith	O-M	OM	..	125	34x4½	SS	....	3300	....	3650	....	4650	....
O-36	6-3½x5½	33.7	Bosch	Zenith	O-M	OM	..	136	35x5	SS	‡3950	†3950	3950	....	....	5000	....
PACKARD																	
2-35																	
2-25	12 3 x6	48.2	Bijur	Own	Bijur	DD	3	135 / 126	35x5	QDC	3050	3050	3050	4150	....	4450	..
PAIGE																	

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DORT																			
9	4-3½x5	16.9	Conn	Carter	Wsths	C	3	105	30x3½	QDC	‡695	695	..	..	1065	..	815
DREXEL																			
R-30-35	4-3½x5	19.6	Bosch	Stmbg	Bjur	C	3	112	33x4	..	855	855	....	....	....	....	....
	4-3½x5	19.6	Bosch	Stmbg	Bijur	D	3	118	34x4	....	†1485	....	1845	....	....	....	....
ELCAR																			
D.F.	4-3½x5	19.6	Delco	Carter	Dyneto	DP	3	115	32x3½	SS	845	845	†845	....	....	....	....
ELGIN																			
	6-3 x4½	21.6	Remy	Stmbg	Wagner	DP	3	116	33x4	....	†985	985	....	....	....	....	....
EMERSON																			
Four	4-3½x4	22.5	A.Kent	Kngstn	....	D	3	110	30x3½	C	....	395	....	....	....	....	....
EMPIRE																			
45	4-3½x5	24.0	A-Lite	Stmbg	A-Lite	C	3	116	33x4	SS	....	960	..	....	....	....	....
60-R	6-3½x4½	25.6	Conn	Stmbg	A-Lite	C	3	120	34x4	SS	†1145	....	....	....	1625	....	....
70	6-3½x4½	25.6	Conn	Stmbg	A-Lite	DP	3	120	34x4	SS	....	1235	....	....	....	....	....
ENGER																			
12	12-2½x3½	34.2	Wsths	Stmbg	Wsths	DP	3	116	32x4	SS	....	1295	....	....	....	....	....
FIAT																			
55	4-5½x6½	42	Wsths	Zenith	Wsths	D	4	140	35x5	QDC	....	....	5500	....	....	6500	....
56½	6-4½x6	46.6	Bosch	Own	Own	D	4	135	37x5	QDC	‡5350	5350	5350	....	....	....	....
FORD																			
T	4-3½x4	22.5	Own	(Holly (Kngstn	....	D	2	100	30x3½	C	345	360	....	505	645	....	....
FOSTORIA																			
	4-3 x4½	14.4	Remy	Zenith	....	D	3	108	30x3½	C	....	695	....	....	....	....	....
FRANKLIN																			
9	6-3½x4	25.3	A.Kent	Own	Dyneto	D	3	115	32x4	SS	1800	1850	†1850	2650	2750	3000	....
F.R.P.																			
45-A	4-4½x6½	33.8	Bosch	Lngmre	Bosch	C	4	110	36x5r	C	7000	....	....	....	....	....	....
45-B	4-4½x6½	33.8	Bosch	Lngmre	Bosch	C	4	140	36x5r	SS	Chassis	7000	....	....	....	....	....
GLIDE																			
6-40	6-3½x5	23.4	Wsths	Rafid	Wsths	D	3	119	34x4	SS	....	1145	....	....	1325	....	....
GRANT																			
K	6-3 x4½	21.6	Remy	Stmbg	Wagner	C	3	112	32x3½	....	‡825	825	....	1050	1000	....	....
HACKETT																			
Four	4-3½x4½	22.5	G & D	....	G & D	D	3	112	31x4	SS	‡888	888	....	....	....	....	....
H. A. L.																			
	12-2½x5	39.6	....	Stmbg	Wsths	DP	3	135	34x4½	SS	2600	†2600	2385	....	..	4500	3500
HALLADAY																			
S	6-3 x5	21.6	A-Lite	Stmbg	Wsths	D	3	118	33x4	SS	‡1185	1150	....	....	....	....	....
R	6-3½x5	22.0	Wsths	Stmbg	Wsths	D	3	122	34x4	SS	1385	1385	....	....	....	....	....
HARVARD																			
4-2T	4-3 x4½	14.4	....	Zenith	Wagner	C	3	100	28x3	QD	750	....	..	....	....	....	....
HAYNES																			
36	6-3½x5	29.4	Remy	Rafid	L-N	DP	3	121	34x4	SS	....	1595	....	....	2260	....	....
37	6-3½x5	29.4	Remy	Rafid	L-N	DP	3	127	35x4½	SS	†1725	....	1725	....	2390	....	....
40	12-2½x5	36.3	Delco	Rafid	L-N	DP	3	121	34x4½	SS	....	2095	....	....	2760	....	....
41	12-2½x5	36.3	Delco	Rafid	L-N	DP	3	127	34x4½	SS	†2225	....	2225	....	2890	....	....
HOLLIER																			
186	6-3 x4½	21.6	Remy	Stewart	A-C	C	3	116	32x3½	SS	....	895	....	....	....	....	....
178	8-3 x4½	28.8	A.Kent	Stewart	Apleo	C	3	116	34x4	SS	†1185	1185	....	....	....	....	....
HUDSON																			
Super-6	6-3½x5	29.4	Delco	Own	Delco	D	3	125½	35x4½	SS	1650	....	1650	1950	2175	2925	....
HUPMOBILE																			
	4-3½x5½	22.5	A.Kent	Zenith	Wsths	D	3	119	34x4	SS	1185	1185	....	....	1735	....	....
N-U	4-3½x5½	22.5	A.Kent	Zenith	Wsths	D	3	134	35x4½	SS	....	....	1340	....	....	....	....
INTER-STATE																			
T	4-3½x5	19.6	Remy	Schebler	Remy	C	3	110	33x4	SS	875	925	†940	....	....	....	1325
JACKSON																			
349	8-3 x3½	28.8	A-Lite	Zenith	A-Lite	DP	3	118	34x4	SS	1295	1295	†1395	....	....	....	....
34-A	4-3½x5	19.6	Conn	Schebler	A-Lite	C	3	112	32x4	SS	....	985	....	....	....	....	....
348-A	8-2½x4½	26.4	Conn	Schebler	A-Lite	C	3	112	32x4	SS	....	1195	....	....	....	....	....
68-A	8-3½x4½	39.3	Conn	Schebler	A-Lite	C	3	124	34x4½	QD	....	....	1685	....	....	....	....
JEFFERY																			
Four	4-3½x5½	22.5	Dixie	Stmbg	Bijur	DP	3	116	34x4	SS	1065	....	1095	....	1260	....	1320
Six	6-3½x5½	29.4	Dixie	Rafid	Bijur	DP	3	125	34x4	SS	1436	....	1465	....	1630	....	1690
JORDAN																			
Sixty	6-3½x5½	29.4	Bosch	Stmbg	Bijur	DD	3	127	35x4½	SS	1650	†1750	1650	2300	2350	3000	....
KING																			
E	8-3 x5	28.8	A.Kent	Ball	W.Lnrd	DP	3	120	34x4	SS	†1585	‡1585	1585	....	2150	....	....
KISSEL																			
642	6-3½x5½	31.54	Eismn	Stmbg	Own	DD	3	128	34x4	SS	....	1650	1850	....	2000	....	....
100-pt.	6-3½x5	25.3	Remy	Stmbg	Own	C	3	117	33x4	SS	†1195	1195	....	1635	1950	....	1635
KLINE																			
638	6-3½x4½	25.3	Wsths	Rafid	Wsths	DP	3	120	34x4	SS	1175	1195	†1195	....	....	....	....
LAUREL																			
35	4-3½x4½	33.8	Dixie	Schebler	Disco	D	3	112	32x3½	QD	†895	850	885	....	....	....	....
LEXINGTON																			
6-O-17	6-3½x4½	25.4	Conn	Rafid	Wsths	DD	3	116	32x4	QD	†1185	1185	....	1350	1350	....	....
6-P	6-4½x5½	27.2	A.Kent	Stmbg	Wsths	C	3	144 132	36x4½	QD	†2675	....	2875	....	....	....	....
PARTIN-PALMER																			
20	4-3½x4½	15.6	Conn	Schebler	A-C	DD	3	96	30x3½	C	545	..	....	....	.....	..	....
32	4-3½x5	19.6	Conn	Carter	Disco	DD	3	110	32x3½	C	....	695	....	....	....	....	....

*6-passenger. †4-passenger. ‡3-passenger.

PATERSON																			
6-45	6-3½x4½	25.4	Delco	Stmbg	Delco	C	3	117	32x4	C	†1095	1095	1095	....	....	....	....
PATHFINDER																			
2B-TC-2C	12-2½x5	39.6	Delco	Stmbg	Delco	DD	3	135	35x5	SS	....	....	3250	....	....	....	....
PEERLESS																			
56-2	8-3½x5	33.8	A.Kent	Special	G & D	DD	3	125	35x4½	SS	†1890	....	1890	2700	2750	3260	....
PHIANNA																			
M	4-3½x6	24.9	Bosch	H & N	W.Lnd.	DD	4	....	32x4½	....	Chassis	....	3600	....	....	....	....
PIERCE-ARROW																			
38-C-4	6-4 x5½	38.4	Bosch	Own	Wsths	C	4	134	36x4½	QDC	4600	4600	†4600	5630	5870	....	....
48-B-4	6-4½x5½	43.6	Bosch	Own	Wsths	C	4	142	37x5	QDC	4900	4900	5000	6060	....	....	....
66-A-4	6-5 x7	60	Bosch	Own	Wsths	C	4	147½	33x5½	QDC	†5900	5900	6000	.....	..	....	....
PILOT																			
6-45	6-3½x5	23.4	Delco	Zenith	Delco	DP	3	119	32x4	SS	†1150	1150	....	....	....	....	....
PREMIER																			
6-B	6-3½x5½	27.3	Delco	Johnson	Delco	DP	3	125½	35x4½	SS	†1895	....	1895	....	2900	3150	....
PRINCESS																			
4-36	4-3½x4½	22.5	Splitdorf	Schebler	Disco	D	3	108	32x3½	....	775	775	‡775	....	....	....	....
PULLMAN																			
424-32	4-3½x4½	22.5	Dixie	Stmbg	Splitdorf	D	3	114	31x4	SS	825	825	†825	....	....	....	....
REGAL																			
4-32	4-3½x4½	19.6	Heinse	Carter	Heinse	C	3	108	30x3½	DC	....	745	....	....	....	....	....
F	8-3 x4½	28.8	....	Johnson	Dyneto	C	3	115	33x4	SS	1200	....	....	....	....	....	....
REPUBLIC																			
E	6-4½x5	43.3	Delco	Rafid	Delco	C	4	133	36x4½	SS	....	†2950	2950	....	....	....	....
REO																			
M	6-3 1/16x5½	30.4	Remy	Rafid	Remy	DD	3	126	34x4½	SS	....	†1250	1250	....	1750	....	....
R	4-4½x4½	27.2	Remy	Johnson	Remy	DD	3	115	34x4	SS	‡875	875	....	....	....	....	1025
RICHMOND																			
6-17	6-3½x5	29.4	Delco	Stmbg	Delco	C	3	124	35x4½	....	....	....	....	....	....	....	.....
4-35	4-4 x4½	25.6	Dixie	Stmbg	Delco	C	3	124	35x4½	....	900	900	925	....	....	....	....
ROAMER																			
R.A.	6-3½x5	23.4	Bosch	Stmbg	Bijur	D	3	127	34x4	SS	2150	1850	....	....	....	....	....
ROSS																			
C	8-3½x5	33.8	A.Kent	Zenith	W.Lnrd.	DD	3	130	35x4½	SS	‡1550	†1550	1550	....	....	....	....
SAXON																			
B-5-R	4-2½x4	12.1	A.Kent	Rebh	Wagner	DD	3	96	30x3	DC	495	....	....	....	....	....	....
S-4	6-2½x4½	19.8	Remy	Rafid	Wagner	DD	3	112	32x3½	SS	....	865	....	....	....	....	....
SCRIPPS-BOOTH																			
D	8-2½x3½	22.0	Remy	Zenith	Wagner	DD	3	120	32x4	SS	†1285	....	....	....	....	..	1460
G	4-3½x4	24.5	Remy	Zenith	Remy	C	3	110	30x3½	C	935	....	....	1450	....	....	....
SIMPLEX																			
5	6-4½x6½	45.9	Eismn	Nwcmb	Bosch	D	4	143½	37x5r	QDC	Chassis	6000	....	....	....	....	....
SINGER																			
17	6-4 x5½	38.4	Bosch	Rafid	Wsths	DD	4	136	35x5	QD	3500	†3500	3500	....	....	4600	....
STANDARD																			
8	8-3½x5	38.8	Splitdorf	Zenith	Apple	D	3	127	35x4½	....	†1950	....	2000	....	....	3500	2500
STANLEY																			
Stmr	2-4 x6	....	....	....	....	..	..	130	34x4½	SS	‡2300	2200	2300	....	....	....	....
STEARNS																			
SKL4	4-3½x5½	22.5	Remy	Schebler	Wsths	DD	3	119	34x4	QDC	††1450	1450	....	2050	....	2900	2050
SK8	8-3½x5	33.8	Remy	Rafid	Wsths	DD	3	123	36x4½	QDC	†2150	....	2150	2900	....	3500	....
STEPHENS																			
60-65	6-3½x4½	25.3	Conn	Zenith	A-Lite	DD	3	115	32x4	....	‡1150	1150	....	....	....	....	....
STEWART																			
T	6-3½x5	29.4	Bosch	Rafid	Wsths	D	3	127	34x4½	SS	‡1950	....	1950	....	....	....	....
STUDEBAKER																			
SF-4-40	4-3½x5	24.2	Remy	Schebler	Wagner	C	3	112	34x4	SS	‡930	....	940	....	....	....	1140
ED-6-50	6-3½x5	36.32	Remy	Schebler	Wagner	C	3	122	34x4	SS	‡1170	....	1180	1750	1700	2600	1380
STUTZ																			
R	4-4½x5½	36.1	Bosch	Stmbg	Remy	C	3	130	34x4½	SS	2275	†2550	*2550	....	....	....	....
SUN																			
17	6-3½x5	23.4	Remy	Rafid	Remy	DP	3	116	34x4	SS	†1145	1095	1145	....	1295	....	....
VELIE																			
28	6-3½x4½	25.3	Remy	Stmbg	Remy	DP	3	115	32x4	SS	1115	1135	†1135	1750	1685	....	....
27	6-3½x5½	29.4	Remy	Stmbg	Remy	DP	4	124	35x4½	SS	....	....	1600	....	....	....	....
WESTCOTT																			{2190
S-17	6-3½x5½	29.4	Delco	Rafid	Delco	DD	3	125	35x4½	SS	1590	1590	1690	....	....	....	{2090
WHITE																			
GAH	4-3½x5½	22.5	Bosch	Own	Own	P	4	115	32x4	QDC	‡2650	2700	.....	..	....	....	....
GED	4-4½x6½	28.9	Bosch	Own	Own	P	4	133½	36x4½	QDC	3750	....	3800	....	....	....	....
16-Valve	4-4½x5½	28.9	....	Own	L.N.	P	4	137½	37x5	....	....	....	4600	....	....	....	....
WILLYS-KNIGHT																			
88-4	4-4½x4½	27.2	Conn	Tltsn	A-Lite	C	3	121	34x4½	SS	....	....	1285	....	1950	1950	....
WILLYS																			
88-6	6-3½x5½	29.4	Conn	Tltsn	A-Lite	C	3	125	35x4½	SS	....	....	1325	....	....	....	....
WINTON																			
33	6-3½x5½	33.7	Bosch	Rafid	Bijur	DD	4	128	36x4½	QD	2685	2685	2735	3600	3900	3900	....
48	6-4½x5½	48.6	Bosch	Rafid	Bijur	DD	4	138	37x5	QD	3500	3500	3500	4500	4750	4750	....
YALE																			
8	8-3½x4½	31.25	Remy	Rafid	Disco	DD	3	126	34x	....	....	....	1350	....	....	....	....

*6-passenger. †4-passenger, ‡3-passenger.

ABBREVIATIONS—"G & D" Gray & Davis, "A-Lite" Auto-lite, "Wsths" Westinghouse, "Eismn" Eisemann, "A. Kent" Atwater Kent, "Emrsn" Emerson, "Sevsn" Sevison, "Undec" Undecided, "Brling" Berling, "Kngstn" Kingston, "Natnl" National, "W.Lnrd" Ward Leonard, "U S L" United States Lighting, "Conn" Connecticut, "Nwcmb" Newcomb, "N E" North East, "A-C" Allis-Chalmers, "L-N" Leece-Neville, "O. M." Owen Magnetic, "B-Rshm" Bosch-Rushmore, "Mgnto" Magneto, "Tltsn" Tillottson, "Atzr" Atomizer, "Rebh" Reichenbach. Clutches: "C" Cone, "P" Plate, "DD" Dry Disk, "DP" Dry Plate, "D" Disk, "G" Gearless, "F" Friction. Rims: "Q D" Quick Detachable, "SS" Straight Side, "C" Clincher, "QDR" Quick Detachable Reversible, "QDC" Quick Detachable Clincher, "R & M" Robbins & Myers.

NOTE—The figures given in columns underneath 2-, 5- and 7-passenger, represent the list catalog prices of the models. Where a tire size is given, as for instance "37x5½r," it means that the rear tires are 27x5½ and the front are of smaller dimensions.

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Coming Events

Shows

Jan. 12-19—Frankfort, Ind., First Annual, Frankfort Auto Dealers' Assn.

Jan. 12-20—Philadelphia, Pa., Show, Philadelphia Automobile Trade Assn., Commercial Museum.

Jan. 15-17—Oakland, Cal., Second Annual Automobile Salon de Luxe, Oakland Hotel. Ivan R. Gates, Mgr.

Jan. 19 - 24 — Manchester, N. H., Show, Academy.

Jan. 20-27—Detroit, Mich., Sixteenth Annual Show, Detroit Automobile Dealers' Assn.

Jan. 20-27—Montreal, Can., Montreal Automobile Trade Assn.

Jan. 22-27—Scranton, Pa., Board of Trade Bldg., H. B. Andrews, Mgr.

Jan. 22-27—Rochester, N. Y., Ninth Annual Show, Rochester Automobile Trades Assn., Exposition Park.

Jan. 22-27—Buffalo, N. Y., Fifteenth Annual Broadway Auditorium, Buffalo Automobile Dealers' Assn.

Jan. 23-27—Oklahoma City, Okla., W. H. Vesper, Mgr.

Jan. 23-27—Lancaster, Pa., Western Market House, Lancaster Automobile Trade Assn.

Jan. 23-27—Baltimore, Md., Show, Fifth Regiment Armory.

Jan. 23-27—Allentown, Pa., Show, Lehigh Automobile Trade Assn. Peter Leisenring, Mgr.

Jan. 23-27—New Bedford, Mass., State Armory, Stephen W. Pierce, Mgr.

Jan. 24-26—Madison, Wis., Union Transfer Bldg.; L. F. Schoelkopf, manager.

Jan. 24-29—Charleston, W. Va., Armory, John B. Cromley, Mgr.

Jan. 24-27—Lewiston, Pa., First Annual.

Jan. 25-27—Asheville, N. C., Asheville Automobile Trade Association.

Jan. 27-Feb. 3—Portland, Ore., Eighth Annual, Dealers' Motor Car Assn. of Oregon.

Jan. 27-Feb. 3—Richmond, Va., First Annual, Gray's Armory.

Jan. 27-Feb. 3—Chicago, Seventeenth Annual Show, Coliseum and First Regiment Armory.

Jan. 27-Feb. 3—Columbus, O., Fourth Annual Columbus Auto Show Co., Memorial Hall.

Jan. 27-Feb. 5—York, Pa., York Automobile Dealers' Association.

Jan. 28-Feb. 3—Wilmington, Del., Hotel Du Pont. J. H. Nixon, Mgr.

Feb. 3-10—Minneapolis, Minn., Twin Cities Automobile Show, Minneapolis Automobile Trade Assn.

Feb. 5-10—Indianapolis, Ind., Indianapolis Automobile Trade Assn., Steinhart Bldg.

Feb. 5-10—Bangor, Me., Show, Bangor Automobile Assn., Auditorium.

Feb. 7-10—Bay City, Mich., Automobile and Accessories, Armory. F. D. Shaver, Mgr.

Feb. 7-11—Kalamazoo, Mich., State Armory, Kalamazoo Automobile Dealers' Assn.

Feb. 10-17—Harrisburg, Pa., Harrisburg Automobile Dealers Assn.; J. Clyde Myton, Mgr.

Feb. 10-17—Hartford, Conn., Hartford Automobile Dealers' Assn., State Armory.

Feb. 10-18—San Francisco, Cal., Show, San Francisco Motor Car Dealers' Assn., Exposition Auditorium. G. A. Wahlgreen, Mgr.

Feb. 12-17—Toledo, O., V. G. Kibby, 1017 Jefferson Ave.

Feb. 12-17—Louisville, Ky., Tenth Annual Show, First Regiment Armory, Louisville Automobile Dealers' Assn.

Feb. 12-17—Kansas City, Mo., Show, Kansas City Motor Car Dealers' Assn.

Feb. 12-17—Kansas City, Mo., Second Annual Tractor Show, Union Station Plaza.

Feb. 13-17—Williamsport, Pa., Armory, John Kelly, Mgr.

Feb. 14-17—Peoria, Ill., Show, Automobile and Accessory Dealers' Assn., Coliseum.

Feb. 15-17—Racine, Wis., Chas. A. Myers, Mgr.

Feb. 17-24—Albany, N. Y., Sixth Annual, State Armory, Albany Automobile Dealers' Assn.

Feb. 17-24—Newark, N. J., Newark Automobile Dealers, First Regiment Armory, Claude E. Holgate, Mgr.

Feb. 19-24—Pittsfield, Mass., J. J. Callahan, Mgr.

Feb. 19-24—Portland, Me., Exposition Building.

Feb. 19-24—South Bethlehem, Pa., Third Annual, Coliseum. J. L. Elliott, Mgr.

Feb. 19-24—St. Louis, Mo., Show, St. Louis Automobile Manufacturers' and Dealers' Assn., Overland Building.

Feb. 19-24—Bridgeport, Conn., Fourth Annual Show, State Armory. R. B. Steiber, Mgr.

Feb. 19-24—Duluth, Minn., Show, New Armory Building, Duluth Automobile Dealers' Assn.

Feb. 19-24—Syracuse, N. Y., Show, State Armory, Syracuse Automobile Dealers' Assn., H. T. Gardner, Mgr.

Feb. 19-24—Des Moines, Iowa, Eighth Annual Show, Des Moines Automobile Dealers' Assn. C. G. Van Vliet, Mgr.

Feb. 19-24—Grand Rapids, Mich., Eighth Annual Show, Automobile Business Association of Grand Rapids, Waters Building.

Feb. 19-24—Springfield, O., Memorial Hall, Springfield Automobile Trade Assn. C. S. Burke, Sec.

Feb. 21-24—Flint, Mich., Coliseum, Lake Side Park, E. W. Jeffers, Mgr.

Feb. 24-Mar. 3—Atlanta, Ga., Automobile Dealers' Assn., Auditorium.

Feb. 24-March. 6—Brooklyn, N. Y., Sixth Annual, Brooklyn Motor Vehicle Dealers' Assn., Twenty-third Regiment Armory.

Feb. 26-Mar. 3—Wilkes-Barre, Pa., Hugh B. Andrews, Mgr.

Feb. 26-March 3—Utica, N. Y., Utica Automobile Dealers' Assn., State Armory.

Feb. 26-March 3—Omaha, Neb., Twelfth Annual Show, Omaha Automobile Show Assn. Clarke G. Powell, Mgr.

March 1-3—Urbana, Ill., Show, Automobile Trade Assn. of Champaign County, Armory of the University of Illinois.

March 3-10—Washington, D. C., Middle Atlantic Motor Assn., Inc., Union Bldg.

March 3-10—Boston, Mass., Fifteenth Annual Show, Boston Automobile Dealers' Assn. C. I. Campbell, Gen. Mgr.

Mar. 6-9—Fargo, N. D., A. Hanson, Mgr.

March 6-10—Fort Dodge, Iowa, Sixth Annual Show, New Terminal Warehouse.

March 7-10—St. Joseph, Mo., St. Joseph Automobile Dealers' Assn., Auditorium.

Mar. 14-17—Trenton, N. J., J. L. Brock, Mgr.

March 14-17—Mason City, Iowa, Third Annual, Armory.

March 14-17—Davenport, Iowa, Show, Coliseum Building, Tri-City Automobile Trade Assn.

Mar. 17-24—Pittsburgh, Pa., Motor Square Garden, J. J. Bell, Mgr.

March 18-23—Cedar Rapids, Iowa, Show, Cedar Rapids Automobile Trade Assn.

April 4-7—Stockton, Cal., Second Annual, San Joaquin Auto Trades Assn. Samuel S. Cohn, Mgr.

Sept. 2-9—Spokane, Wash., Interstate Fair.

LeRoi Takes Over Milwaukee

MILWAUKEE, Jan. 13. — The LeRoi Co., incorporated under the laws of Wisconsin with a capital stock of $350,000, has taken over the plant and the gasoline-engine business of the Milwaukee Machine Tool Co., and will devote its attention exclusively to the manufacture of 4 and 6 cylinder motors for pleasure cars, light commercial cars and light tractors. Officers of the LeRoi Co. are: President and general manager, Charles W. Pendock; vice-president, J. Roy Frantz; secretary and treasurer, Norman Christiansen. Pendock is a British engineer and designer, and is responsible for the design of the LeRoi motor. The company has made ready for the market a 6-cylinder type in addition to the line of 4-cylinder engines already manufactured. The new design is essentially a pleasure-car type and has cylinder dimensions of 3⅛ by 5 in. The machine-tool business has been removed and consolidated with the Kearney & Trecker Co., one of the best known builders of milling machines in the United States, also located in West Allis.

Pullman Resumes Operations

YORK, PA., Jan. 12—Judge Charles B. Witmer in the United States District Court at Williamsport yesterday appointed William A. Keyworth, Carlton L. Hoff and Henry D. Schmidt, all of York, Pa., receivers for the Pullman Motor Car Co. of York. The same men were recently appointed receivers of the company by Judge Nevin M. Wanner in York, but that action only covered the assets of the company in York County, whereas the receivership resulting from yesterday's action protects the assets in all parts of the United States. The company has assets in twenty-six States. These comprise automobiles. All the company's real estate and manufacturing property are located in York. The receivers are authorized to borrow not more than $120,000 for the conduct of the company's business. Operations in the company's plant were resumed in full yesterday, after taking a complete inventory.

Motor Securities Quotations

	Jan. 13, 1917 Bid	Asked
Ajax Rubber Co.	71	74
J. I. Case T. M. Co. pfd.	86½	89
Chalmers Motor Co. com.	30	33
Chalmers Motor Co. pfd.	..	..
*Chandler Motor Car Co.	97	99
Chevrolet Motor Co.	103	107
Fisher Body Corp.	37	41
Fisk Rubber Co. com.	80	85
Fisk Rubber Co. 1st pfd.	110	115
Fisk Rubber Co. 2nd pfd.	90	100
Firestone Tire & Rubber Co. com.	148	151
Firestone Tire & Rubber Co. pfd.	106	107
*General Motors Co. com.	500	800
*General Motors Co. pfd.	118	125
*B. F. Goodrich Co. com.	54½	54⅝
*B. F. Goodrich Co. pfd.	..	111
Goodyear Tire & Rubber Co. com.	278	282
Goodyear Tire & Rubber Co. pfd.	107	108
Grant Motor Car Corp.	7	8
Hupp Motor Car Corp. com.	3	4
Hupp Motor Car Corp. pfd.	..	..
International Motor Co. com.	16	18
International Motor Co. pfd.	..	..
*Kelly-Springfield Tire Co. com.	58	58½
*Kelly-Springfield Tire Co. 1st pfd.	90	95
*Lee Rubber & Tire Corp.	22¾	23
*Maxwell Motor Co. com.	51¼	52
*Maxwell Motor Co. 1st pfd.	70½	71⅝
*Maxwell Motor Co. 2nd pfd.	35¼	36¼
Miller Rubber Co. com.	247	251
Miller Rubber Co. pfd.	106	107
Packard Motor Car Co. com.	165	173
Packard Motor Car Co. pfd.	101½	..
Paige-Detroit Motor Car Co.	40	40¼
Peerless Truck & Motor Corp.	16	18
Portage Rubber Co. com.	168	172
Regal Motor Car Co. pfd.	26	..
†Reo Motor Truck Co.	..	..
Saxon Motor Car Corp.	63½	66
Springfield Body Corp. com.	75	90
Springfield Body Corp. pfd.	110	120
Standard Motor Construction Co.	6	6½
Stewart Warner Speed. Corp com	99½	100
Stewart Warner Speed. Corp. pfd.	..	..
*Studebaker Corp. com.	104½	105½
*Studebaker Corp. pfd.	..	..
Swinehart Tire & Rubber Co.	..	80
United Motors Corp.	41½	42½
*U. S. Rubber Co. com.	57¼	58
*U. S. Rubber Co. pfd.	111	111½
White Motor Co.	49	49⅜
*Willys-Overland Co. com.	35¾	36¼
*Willys-Overland Co. pfd.	96½	97

*At close Jan. 13. Listed N. Y. Stock Exchange. †Par value, $10; others, $100.

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MICHELIN

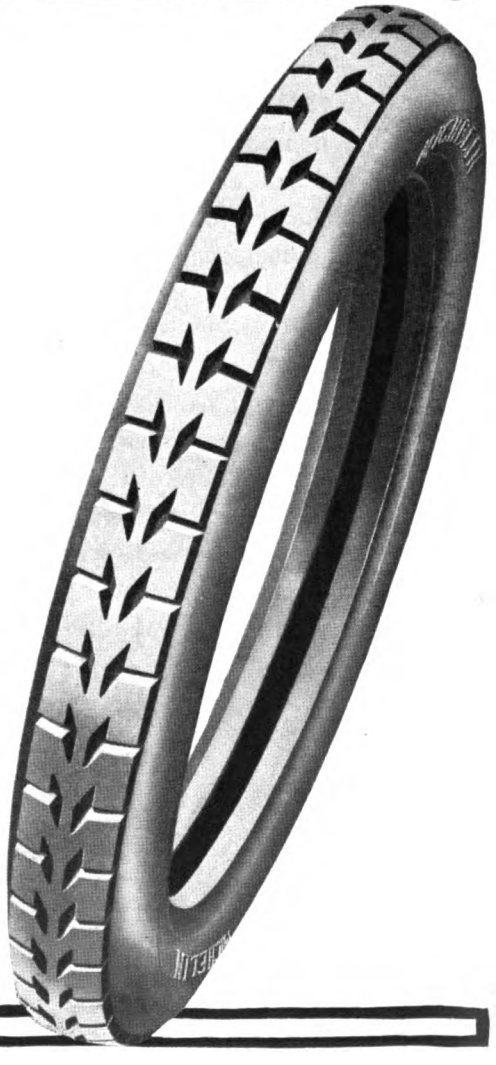
Michelin will introduce you to the kind of customers you want—satisfied customers who will come back again and again for more Michelins because they find it is to their interest to use these high-quality, moderate-price tires.

The Michelin proposition not only means easier sales, but it means a steadily growing business and reputation for you.

DROP US A LINE FOR THE DETAILS

Michelin Tire Co.

Milltown New Jersey



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GUTS

A poor word in print, maybe, but who knows a word which is more expressive of those parts of a pleasure car or truck which are way inside, can't be seen and yet determine the machine's ability to give service—its endurance.

Your trucks or pleasure car must **work.** That's what you bought it for—**work.**

How can it **work** and **keep on** working if its **guts** are poor.

The guts of a machine are those parts which are subjected to wear. As long as these parts *resist* wear the machine keeps on working.

Therefore—

When you *buy* a machine—Truck, pleasure car or any other kind of machine, make sure of the quality of its *guts*—its *wear-subjected*, **non-adjustable** *bearing parts.*

And—

When you overhaul your present car to renew these wornout bearings and bushings make sure of the quality of the *new* ones you give them. The better the quality of these new bearings and bushings, the longer it will be before you will have to do the job all over again.

Non-Gran Bushings cost more, but they *keep* your machines *working.*

Practically all high grade quality-built cars are Non-Gran equipped when they leave the factory.

Practically every Taxicab Company in North America and most of the owners of large truck fleets use Non-Gran exclusively when making new bushings at overhauling time. They cannot be sold any other metal for this work.

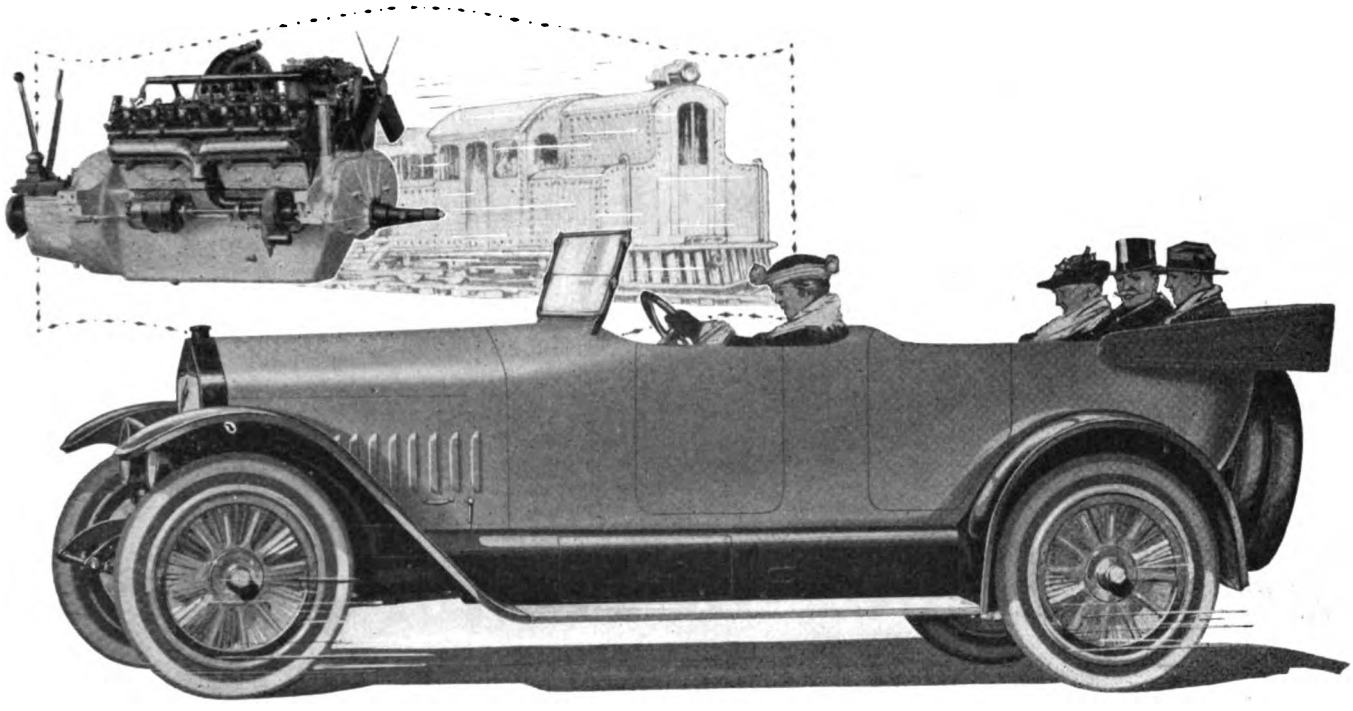
All leading garages and repair shops carry an assortment of Non-Gran cored bars from which they make Non-Gran *quality* bushings.

Non-Gran cored bars are for sale by leading jobbers everywhere.

American Bronze Company
Berwyn **Pennsylvania**

HIGH SPEED
NON-GRAN
BEARING BRONZE

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National Silent Power

Third Series of Twelves
A NEW MODEL

National built motors have always been abreast, and generally ahead of the industry. When four cylinders were the proper thing, National built the world's Champion Fours. When sixes came into vogue, it was National that built the first American Sixes and National Sixes of today are the highest development of that type. National was a pioneer in the latest type motor—the Twelve Cylinder.

National Twelve Cylinder cars are today in operation in every state in the Union and in eleven Foreign countries. Owners everywhere testify to the success of the Twelve.

The same corps of engineers who have produced previous successes, have within the last year, concentrated on improvements for this third National Twelve.

NEW FEATURES

Removable cylinder heads to facilitate cleaning and inspecting.

Increased size of cylinder with corresponding increase in power.

Balanced crankshaft — another power increasing improvement.

Heated intake manifold to handle effectively the low grade fuel.

Larger main bearings reduce the vibration in a practically vibrationless motor.

Valves on outside of V continued together with new design valve lifters make National Twelves most accessible of all V motors.

Independent electrical units—
Delco for Ignition and separate, independent Starting and Lighting units.

¶ This new Twelve is the last word in multi-cylinder efforts to achieve perfection.

¶ From low to high speed—and at every stage in between—there is the same *high pressure* of power, even, supple and subject to your perfect control.

¶ In short, it is a marvelous motor—not to be appreciated until driven.

¶ To be the National dealer is not only to have the best motor to demonstrate, but to have the best of *everything* to offer customers.

HIGHWAY TWELVE $2150 HIGHWAY SIX $1750

12 Cylinder $2150

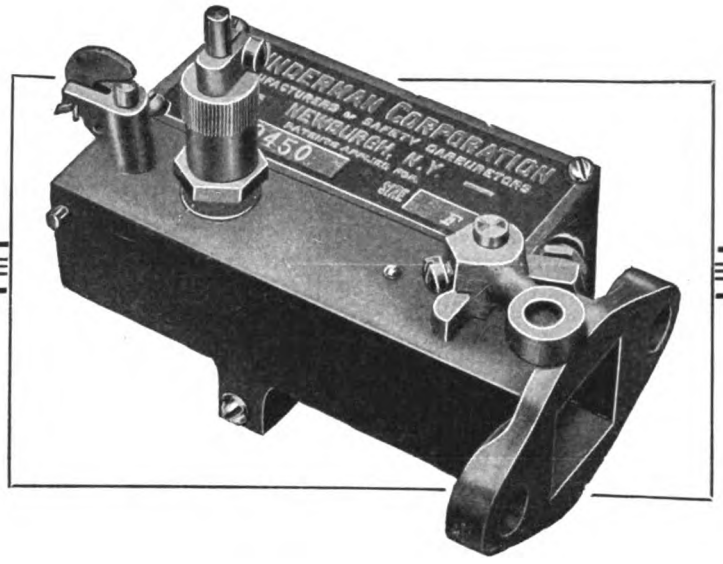
AMERICAS BEST LOOKING CARS

6 Cylinder $1750

National Motor Car & Vehicle Corp., Indianapolis

Seventeenth Successful Year

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The Verdict of the New York Show

With all due regard to business modesty, we nevertheless truly report that the carburetor which attracted the greatest attention at the wonderful and complex exhibit of accessories at the New York Automobile Show at Grand Central Palace was the

$5 **SUNDERMAN** **$5**

Vacuum Carburetor

F. O. B. Newburgh

$6.50 with elbow for attachment where manifold is not cast in head. Ford and Metz cars do not need elbow

F. O. B. Newburgh

$6.50 with elbow for attachment where manifold is not cast in head. Ford and Metz cars do not need elbow

THERE was a reason for it. Three million motorists are looking for a carburetor which will give an adequate gas supply economically under all conditions of driving—in high speed or low, in wet or dry weather, warm or cold, in high or low altitudes. When they find it they will buy it—and the great response that the SUNDERMAN VACUUM CARBURETOR has met proves that it supplies the need and does the work.

OWNERS: See your dealer or write us at once and let this carburetor begin to make good for you. A busy car will save the purchase price in 3 days. Take the high cost out of your 1917 driving by ordering now.

WE claim for it—and you can prove it yourself—the following advantages:

Simplicity, More Power, Easier Starting, Greater Flexibility, Quicker Acceleration, Speedier Pick-up, Greater Hill-climbing Ability, and a Saving of 25 to 50% in Gasoline

DEALERS: We talk to you on the basis of an exceptionally successful year just closed. THE SUNDERMAN VUCUUM CARBURETOR MAKES GOOD FOR YOU AS WELL AS YOUR CUSTOMERS. Let us hear from you quickly—it will be to your advantage.

MANUFACTURERS: Let us help you to solve your motor difficulties. We know we can aid you, and we are willing to prove it under any test.

See us at the Chicago Show, Coliseum Basement, Space 39, Armory Balcony

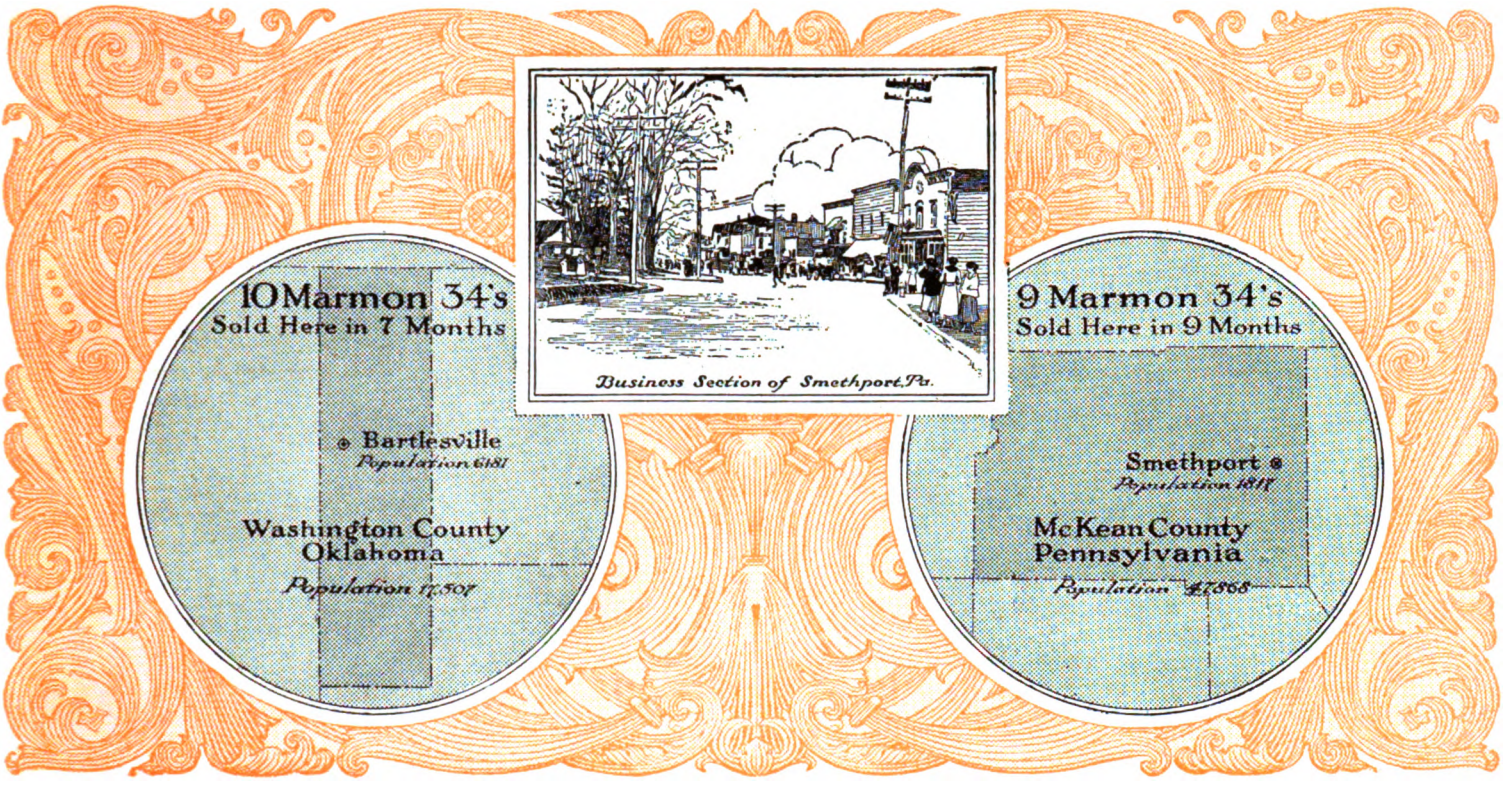
SUNDERMAN CORPORATION

9 Chambers Street, NEWBURGH, N. Y.

Western Sales Office: 403 Kresge Bldg., Detroit, Mich.

See us at the Chicago Show, Coliseum Basement, Space 39, Armory Balcony

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Why Small Town Dealers Are Selling So Many Marmons

ALONG with a number of other theories the Marmon 34 has shattered the belief that relatively very few major class cars can be sold outside the large cities.

While no one expects that Smethport, Pa., (with its two weekly papers) will buy the 400 Marmons New York City took last year, it is somewhat surprising to learn that the Backus Novelty Company there sold a Marmon a month last season. But Smethport is no great exception.

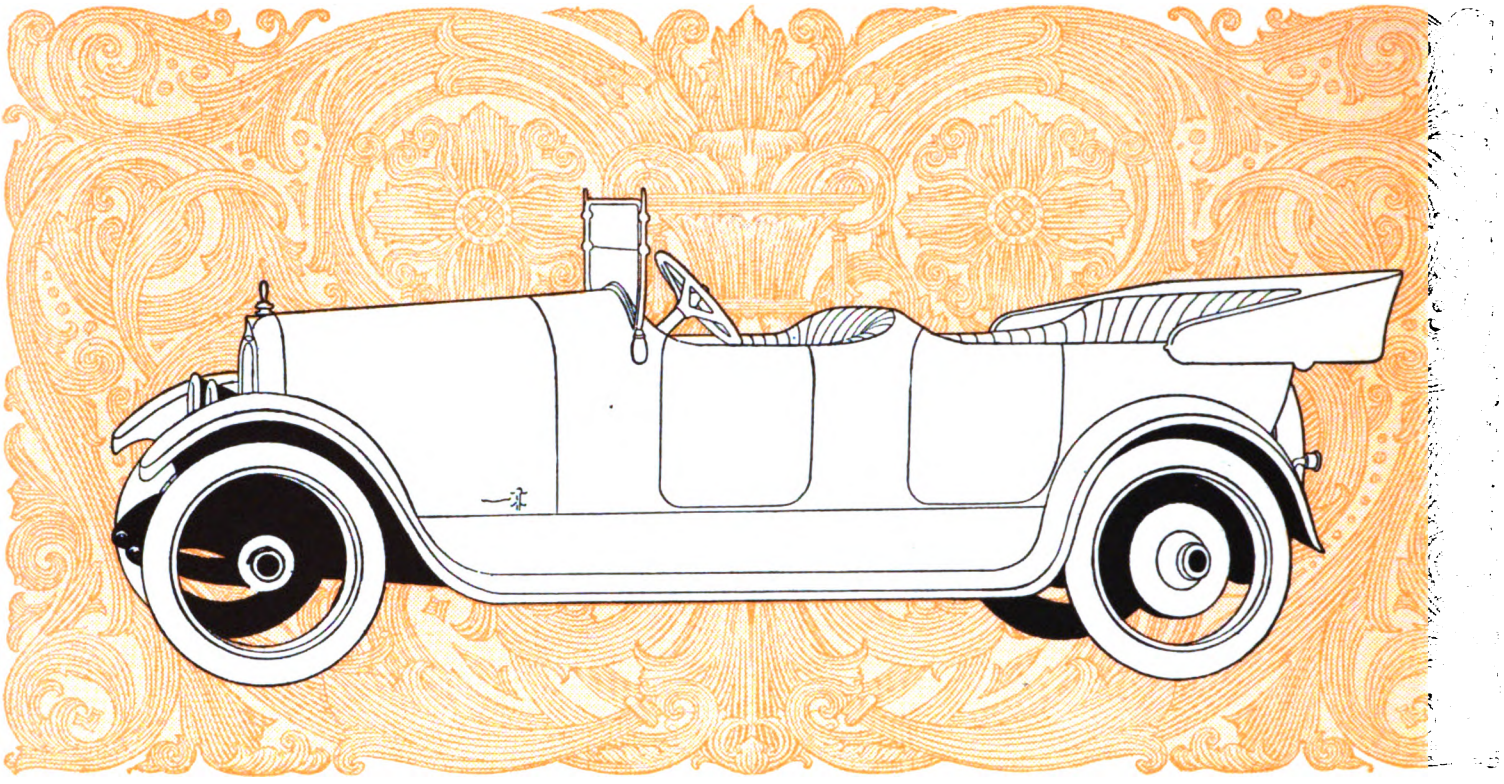
Witness, if you please, the record of Mr. Jack Shaw, who sold 10 Marmons in just 7 months in one small county in Oklahoma.

Mr. Shaw and the Backus Novelty Company, could, as they say themselves, have sold about double the number they did if we could have furnished the cars.

There are many like them among the Marmon dealers. Yet why, you will ask, should this car find a market where others of its class are seldom seen?

On the following page we give you a few of the reasons.

Digitized by Google



MARMON 34

WHY THIS CAR'S MARKET IS UNRESTRICTED

THE Marmon 34 weighs a half-ton less than any car of equal size and power. It consumes from 50 to 75 percent less gasoline besides; it is easy on tires, and in spite of its lightness, it holds the road at high speeds and does not sway.

Take the Marmon a thousand miles from a boulevard, and it behaves as if it were made for country roads alone. It rides with comfort and safety on the highway at 50 and 55 miles an hour. This is one of the great outstanding features that caused so much rejoicing among the lucky motorists who last summer toured in the Marmon 34—East and West.

Such attractions as these in a car with 74 brake test horsepower and 136-inch wheel-base have broken down the city market wall, beyond which, in the minds of many dealers, a car of this size was not in great demand.

The Marmon, remember, is salable anywhere and *everywhere* that there are people with the means to buy it.

At the Chicago Automobile Show note how this scientific car attracts the public.

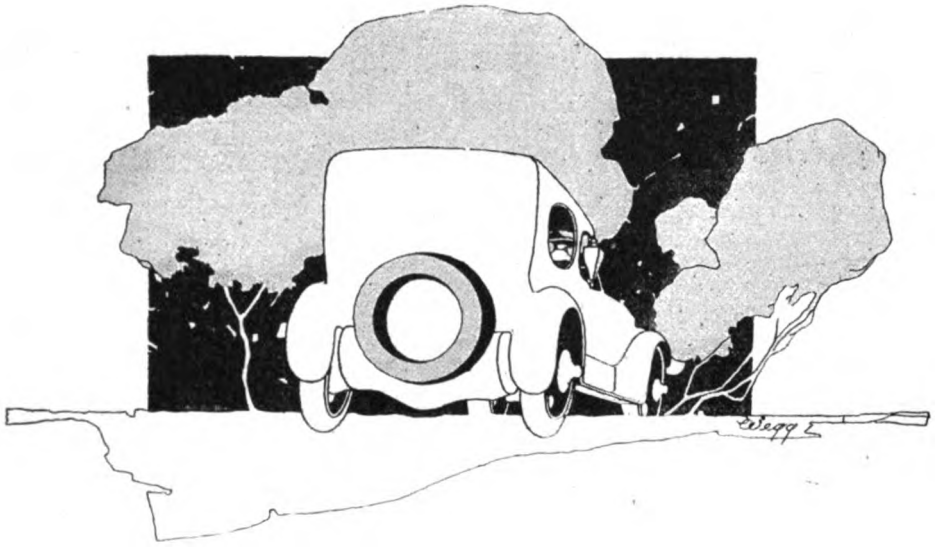
But meanwhile, write for our proposition to dealers—regardless of the size of your community.

NORDYKE & MARMON COMPANY

Established 1851

INDIANAPOLIS, INDIANA

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National Speedway Tires

THERE is a certain atmosphere of clean-cut smartness about a *Speedway* tire.

You find the same thing in a well-tailored suit, in custom made shoes, in special automobile bodies—

Hand workmanship, better materials, more careful supervision during construction, set standards that cannot be duplicated by ordinary machine-made products.

So it is with *Speedway* Tires.

They have the inborn strength and stamina and the *plus* qualifications you want most in a tire.

They have the appearance of thoroughbreds and they act the part.

They are made to make good, *and they do.*

Let your next tire be a *Speedway.* Compare its mileage with that which you have been getting from other tires. The result will more than convince you.

Speedway Tires are not as yet for sale in all cities. If your dealer cannot supply you, write direct.

Dealers—Jobbers

It is a well-conceded point among successful tire dealers that territorial control of a good tire that sells at a reasonable price, represents the very best kind of a tire to sell.

On such a basis, tire dealers are not forced to compete for business against price-cutting competition on the same tire or against curb stone brokers or ***against even the factory itself.***

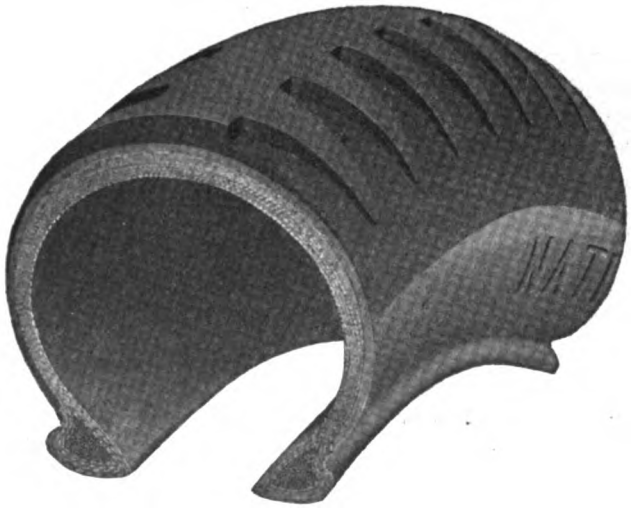
We can offer you just such an exclusive proposition, providing the territory you want has not already been allotted.

Before contracting for your next season's supply of tires look over the NATIONAL proposition.

Get an idea of what we can do for you.

We are making contracts for 1917 NOW.

National Rubber Company, Pottstown, Penna.

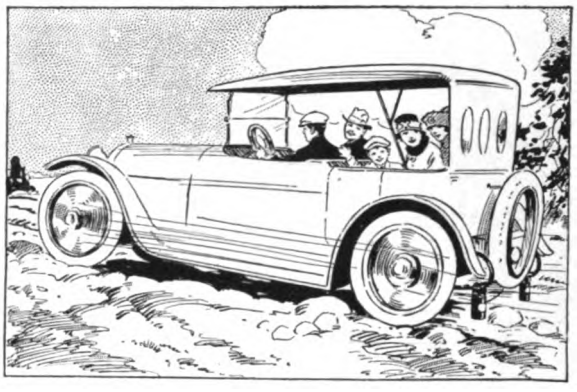


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DEALERS!

The Motor Car Owners In Your Territory Can





Avoid THIS and Enjoy THIS.

By Equipping Their Cars With

STONE

SHOCK ABSORBERS



Showing application of Stone Shock Absorber to ordinary type of spring.

Here Is A Shock Absorber That Gives Satisfaction That You Can Sell For $12 And Make Your Profit On It

We have already convinced thousands of the superiorities of Stone Shock Absorbers. Our extensive advertising campaign will convince many more thousands. This means *easy* sales for you. Everywhere Stone Shock Absorber users are enthusiastic endorsers of this wonderful shock absorber. This means *satisfied* sales for you. And, of equal importance, there is a good profit in them for you at $12. This means *profitable* sales.



Showing application of Stone Shock Absorber to platform type of spring.

NOTE THESE FEATURES

1. Stone Shock Absorbers have the desirable features *of all other* shock absorbers and many they haven't got.
2. The double bearing surfaces maintain perfect alignment. This prevents side thrust and wear. *Stone Shock Absorbers as far as we know have never shown any wear.*
3. A two-inch throw as against 1½ inches, the maximum on other absorbers, gives an additional margin for the complete smothering of shocks. This extra half-inch saves many springs and adds much to the comfort of the riders.
4. The oiling pad on Stone Shock Absorbers furnishes the oil just exactly where it is needed. No other shock absorber has this feature.
5. Stone Shock Absorbers can be adjusted within a range of 1500 pounds.
6. Made to fit all weight cars.

GET READY!

Don't miss this chance to add to your accessory business. The Stone Shock Absorber at this price has proved to be the sensation of the automobile accessory field. They are being sought for by motor owners in your vicinity today. Every Stone Shock Absorber you sell brings new business to you and makes new friends for you. Don't let other dealers get this business away from you. Act quickly. Be ready first.

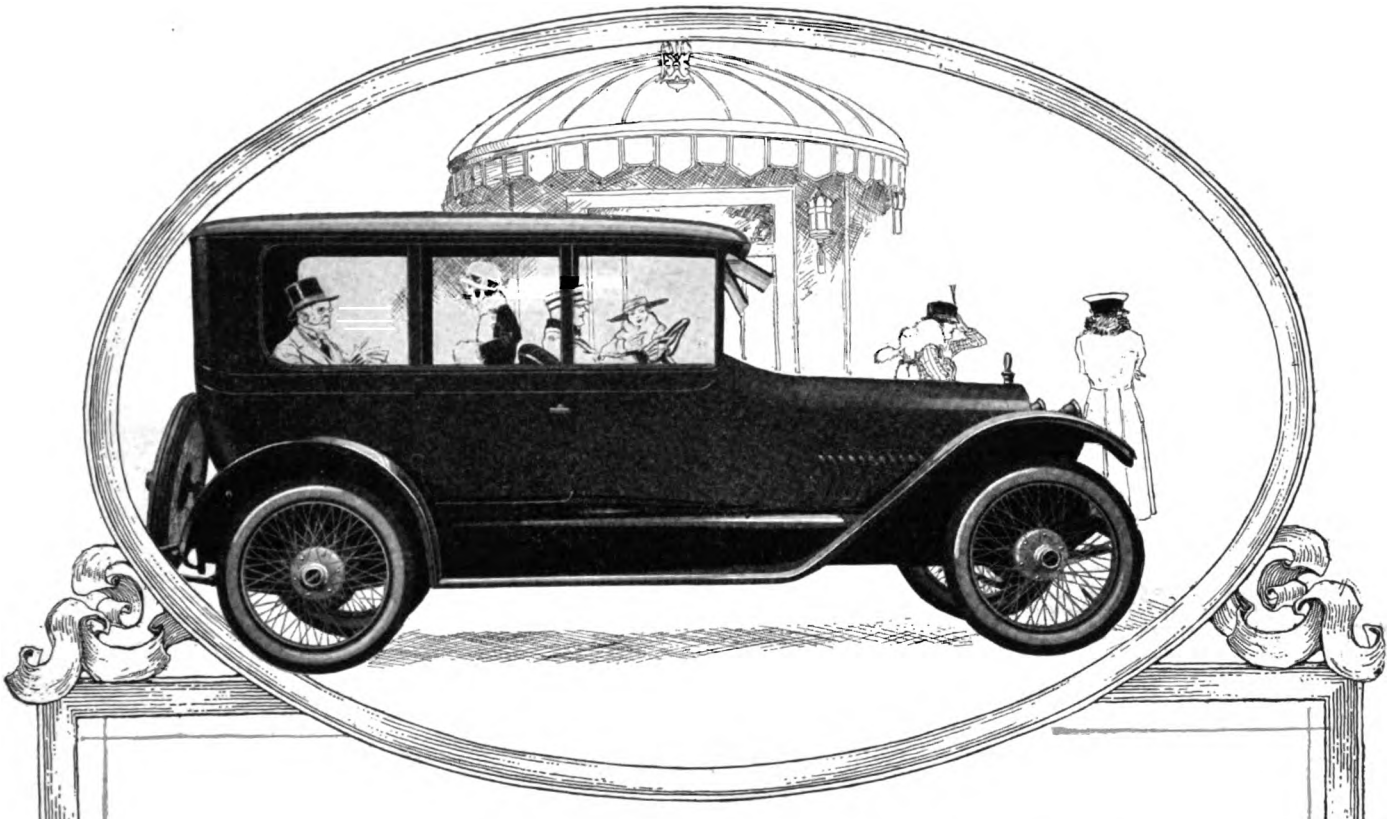
Write your jobber for particulars about this shock absorber at the sensation price of $12 *today*. If he can't supply you write direct to us.

Easy—Satisfied—Profitable Sales For Stone Shock Absorber Dealers

Made and Guaranteed by **UNIVERSAL RIM COMPANY** **Makers of the BAKER RIM**

Dept. 83, 1502 Michigan Avenue, CHICAGO, ILL.

Digitized by Google



"America's Greatest Light Six"
HAYNES
"America's Greatest Light Twelve"

SEE US AT THE
CHICAGO SHOW
SPACE C-4

Creating Winter Business for Dealers Is But a Part of Haynes Service

—yet right at this time when the tendency is for sales to slacken it is a service of money-making importance.

The HAYNES winter business campaign now in full swing is unique—forceful—resultful.

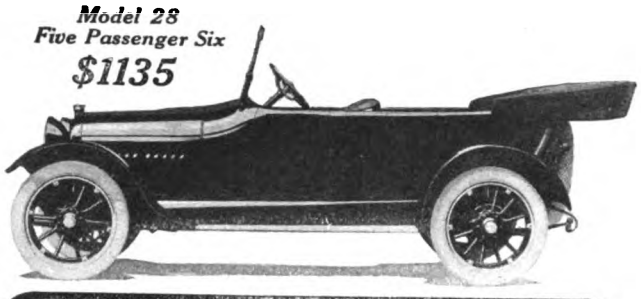
It is promoting a steady, year-'round flow of sales in the HAYNES dealers' direction. It is straightening his profit curve.

A limited number of new HAYNES dealerships are now available for 1917. Wire, write or call at the factory for full particulars.

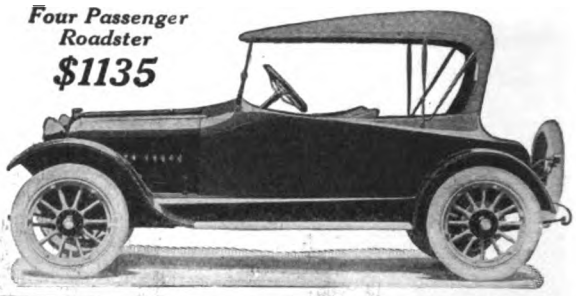
The Haynes Automobile Co.
3 SOUTH MAIN STREET KOKOMO, INDIANA

Digitized by Google

Model 28
Five Passenger Six
$1135



Four Passenger
Roadster
$1135



See Them

Until you see the new 1917 Velie Biltwel you have not seen the ultimate achievement in the light six.

With its snappy, graceful, streamline bodies—longer—roomier—upholstered in deep tufted, genuine leather and curled hair—with its long, easy riding, underslung springs—automatic ignition, push button starting—everything in and on—the new Biltwel line combines with its great power, the refined comfort and luxury that make such a strong appeal to the critical car buyers of today.

Eight Different Body Styles

The cars here illustrated give the Velie Dealer a car for every demand. Whether your customer represents a large family or wishes a car for individual use, he or she will find just the car wanted in the Biltwel line.

With this line, and the Velie's low prices, the Velie Dealer has an unusual advantage in any market—city, town or country.

This advantage is further strengthened by the Velie's big, national advertising campaign. Full pages in Saturday Evening Post, Collier s, Literary Digest and other periodicals, with liberal space in the farm papers and newspapers, are making Velie values familiar to every car buyer in America.

Bigger

At The

New York Show, the Velie Biltwel cars were easily the stars of the Light Six field. Dealers and motoring public alike were quick to recognize the superior style and dignified individuality, as well as the exceptional construction that underlies the surface. Velie values are established by many years of service in the hands of owners in all parts of the world.

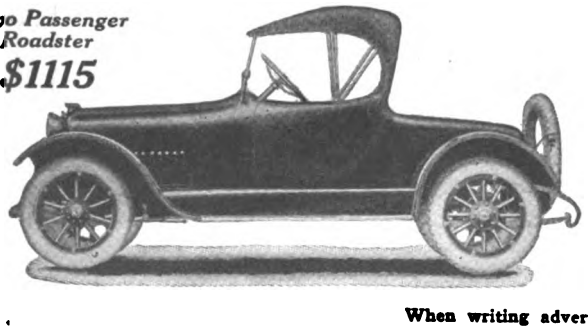
Velie

Such features as those of the Velie, are found only in a car built up to a long-maintained standard, and not down to a price. Built by an organization of the Velie's exceptional facilities—with half a century of manufacturing experience—and a mile of Velie factory.

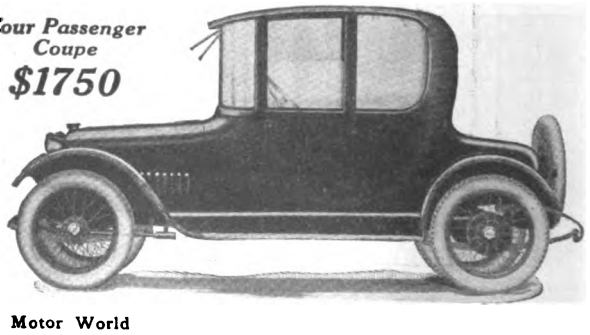
This is the most convincing assurance of Responsibility — Service — Satisfaction. *"The name insures the Quality."*

Better

Two Passenger
Roadster
$1115

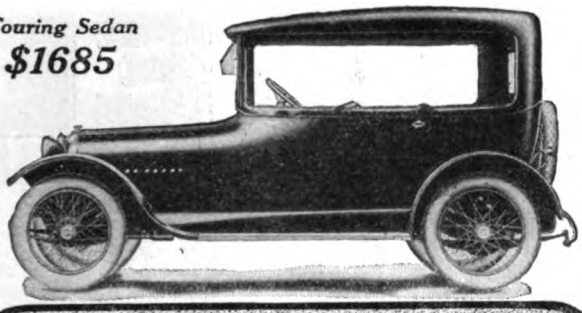


Four Passenger
Coupe
$1750

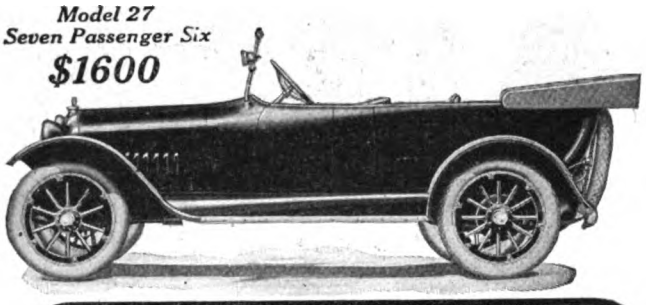


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Touring Sedan
$1685



Model 27
Seven Passenger Six
$1600



Chicago

will have the same beautiful display of Velie values that was so much admired by the crowds at Grand Central Palace. It will have prominent space on the main floor of the Coliseum.

Dealers and public are cordially invited to inspect these cars. Make a special point of seeing them—remember always that there is a Velie Show every day of the year at all Velie Salesrooms where stock cars may be seen.

Show

exhibits of the Velie are the same in every respect as the stock cars, except in the use of unusual colors.

The lasting mirror finish—the genuine leather upholstery—the powerful, *special* Velie-Continental motor—are all *there,* in each car that leaves the factory.

Timken axles front and rear, are one of the high-priced features of Velie Sixes for 1917. It is only one evidence of the quality and superior specifications found throughout the car. Recognized as the standard of excellence. Money cannot buy better.

Values

When you see these new cars you will understand why the Velie output for this year had to be tripled—why over 700 dealers have been added to the Velie sales organization—why the Velie demand is spreading wherever good cars are sold.

Month by month the demand steadily increases. In one day more than a million dollars' worth of Velie cars were contracted for at the factory.

These Features Indicate the Velie Extra Values

Six-cylinder Velie-Continental motor—Timken axles front and rear—removable cylinder head—helical gears in motor, no chains—enclosed multiple dry disc clutch—Hotchkiss drive—spiral gears in floating rear axle—Remy automatic ignition—push button starter—double bulb headlights—dashlight—all wires enclosed in metal conduits—rear gasoline tank—vacuum feed—simple rocking gear shift lever—long, flexible, underslung springs—expanding tire holder—light of weight—economical of fuel.

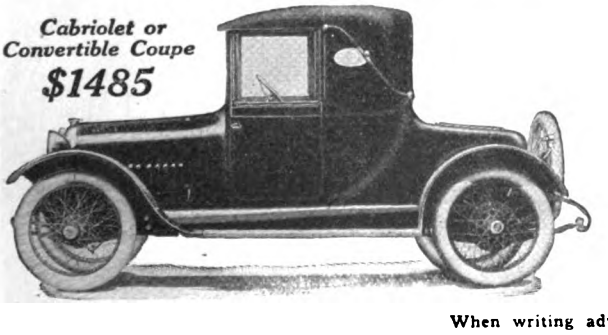
If Velie Cars are not represented in your territory, write us. See us at the show. Or come to the factory.

Velie Motors Corporation
115 Velie Place Moline, Illinois

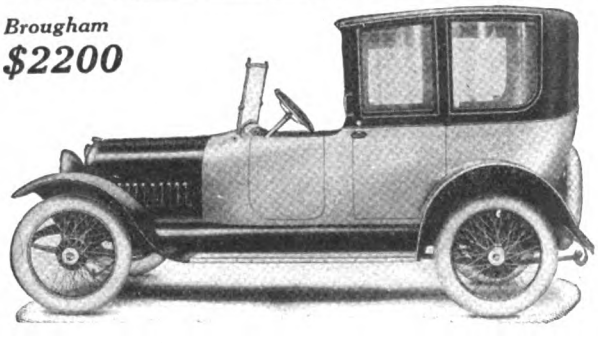
More

Power

Cabriolet or
Convertible Coupe
$1485



Brougham
$2200

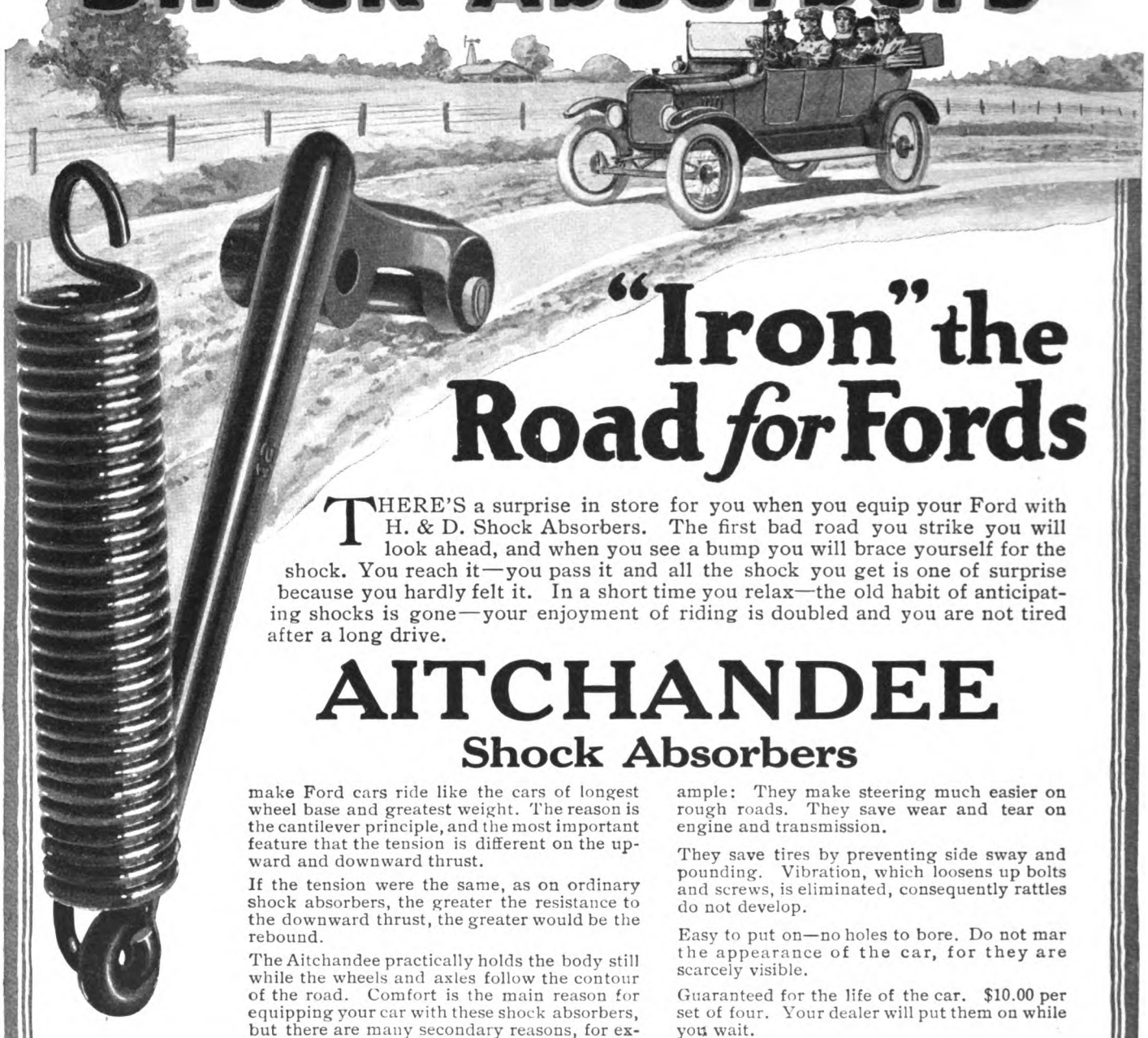


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AITCHANDEE

"TRADE-MARK REGISTERED"

Shock Absorbers



"Iron" the Road *for* Fords

THERE'S a surprise in store for you when you equip your Ford with H. & D. Shock Absorbers. The first bad road you strike you will look ahead, and when you see a bump you will brace yourself for the shock. You reach it—you pass it and all the shock you get is one of surprise because you hardly felt it. In a short time you relax—the old habit of anticipating shocks is gone—your enjoyment of riding is doubled and you are not tired after a long drive.

AITCHANDEE
Shock Absorbers

make Ford cars ride like the cars of longest wheel base and greatest weight. The reason is the cantilever principle, and the most important feature that the tension is different on the upward and downward thrust.

If the tension were the same, as on ordinary shock absorbers, the greater the resistance to the downward thrust, the greater would be the rebound.

The Aitchandee practically holds the body still while the wheels and axles follow the contour of the road. Comfort is the main reason for equipping your car with these shock absorbers, but there are many secondary reasons, for example: They make steering much easier on rough roads. They save wear and tear on engine and transmission.

They save tires by preventing side sway and pounding. Vibration, which loosens up bolts and screws, is eliminated, consequently rattles do not develop.

Easy to put on—no holes to bore. Do not mar the appearance of the car, for they are scarcely visible.

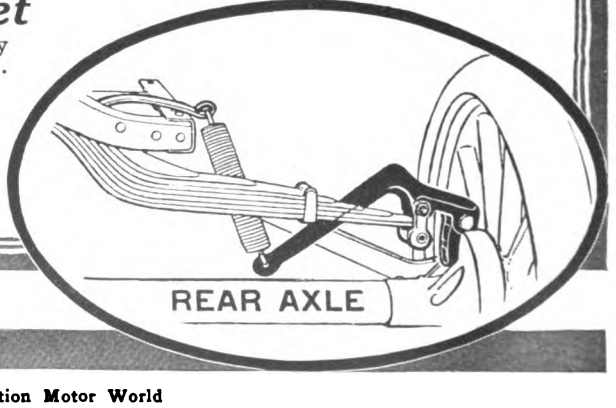
Guaranteed for the life of the car. $10.00 per set of four. Your dealer will put them on while you wait.

If your dealer cannot supply you — ***Write Us for Booklet***

and we will see that you get your set promptly. Don't accept any but the Aitchandee. 100,000 sets ironing the roads for Fords today.

H. & D. Company, Inc., Goodland, Ind.

DEALERS: The Aitchandee Shock Absorber is right in structure, already tremendously popular, advertised nationally. It will rapidly build a profitable addition to your present business. Write us for proposition at once.

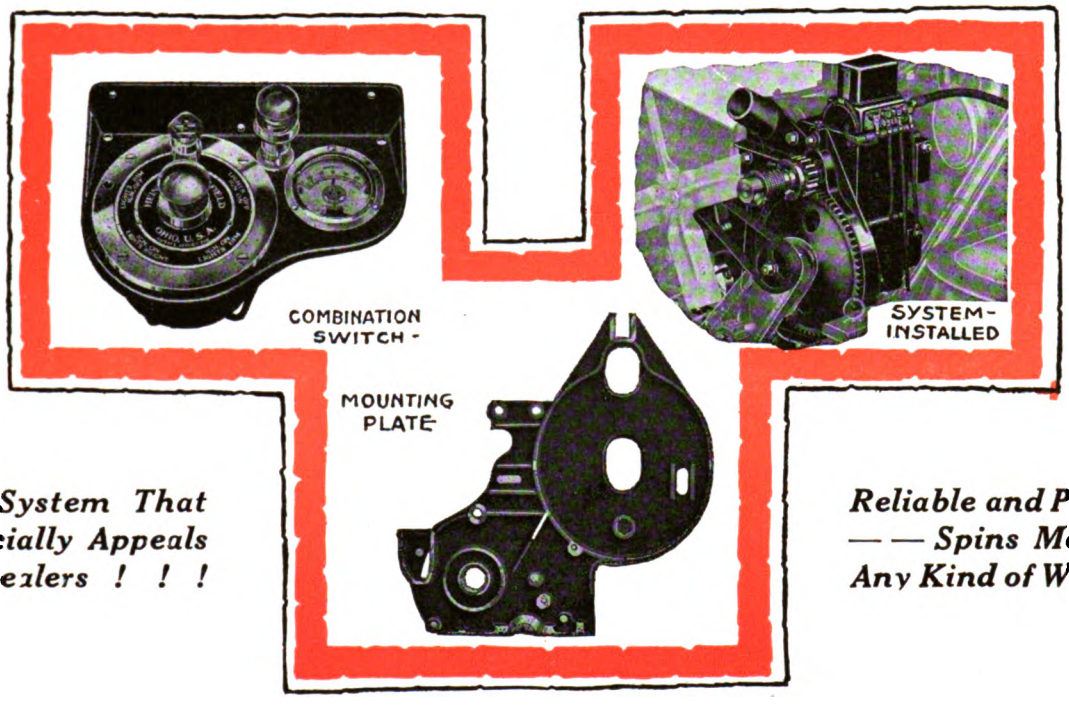


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ELECTRIC CRANKING AND LIGHTING

— FOR *Ford* CARS —

HEINZE-SPRINGFIELD



The System That Especially Appeals To Dealers ! ! !

Reliable and Positive — — Spins Motor in Any Kind of Weather

HEINZE-SPRINGFIELD is a two unit, six volt system with Bendix Drive, designed especially for Ford Cars

Read the following facts and learn why Heinze-Springfield is so overwhelmingly favored by the best dealers and distributors in the field.

"BUILT-IN" SYSTEM
The Heinze-Springfield System fits into the Ford Engine Construction, and is built to give the same service as the car itself.

NOT AN ATTACHMENT
Not a makeshift, patchwork, or "stuck on" proposition. Eliminates brackets. No "lining up" to be done by the garageman. No holes to drill or files to touch in the installation.

NO BROKEN CHAINS
"Lining up" of drive chain is assured. The patented Mounting Plate and chain adjustment prevent loose and noisy chains.

RIGID INSTALLATION
Heinze-Springfield Equipment becomes part of the Ford Engine. It is as rigid and as sturdy as the car itself.

NO INTERFERENCE WITH ACCESSIBILITY
Heinze-Springfield system does not interfere with engine repairs or valve grinding.

FOUR HOURS FOR INSTALLATION
The design is so simple, so practical, and fits so well into the Ford Engine Construction that any garageman can easily install it within four hours' time.

A BIG PROPOSITION FOR FORD DEALERS
Write or wire today for further information.

ABSOLUTELY NO EXTRAS TO BUY—

PRICE $85.00 f.o.b. Springfield, Ohio

System Includes Ammeter, Dash Light, Tail Light and Lock

(These extras would alone cost $10.25 if purchased separately.)

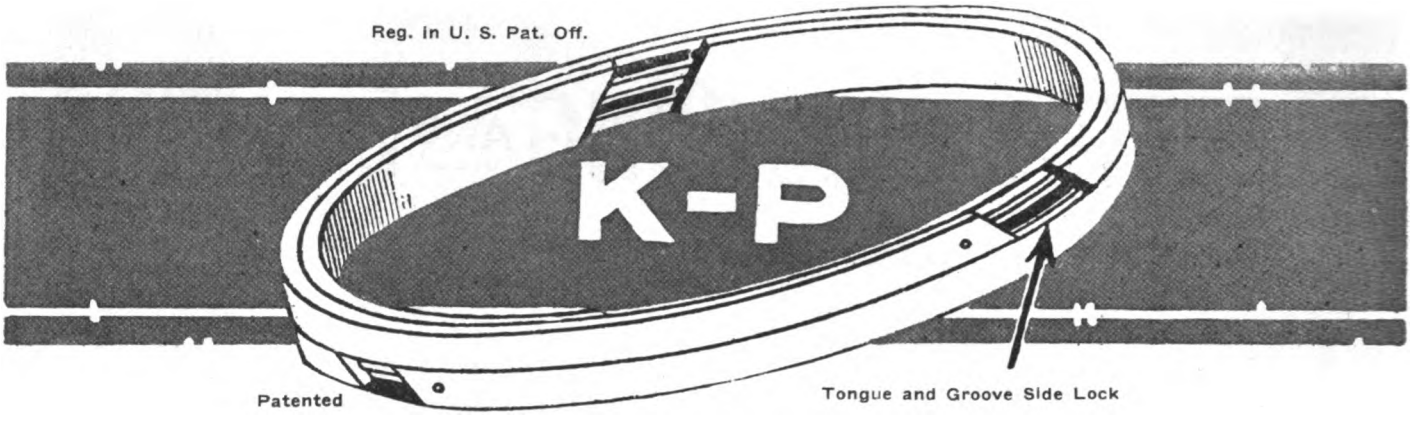
THE JOHN O. HEINZE COMPANY

Springfield Ohio

MEET US AT THE AUTOMOBILE SHOW

Chicago—
Space 178, Coliseum Annex Second Floor

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EVERY ADDITION TO POWER PAYS

The most important factor in securing compression is the efficiency of the piston rings. And compression means power.

You would not find it difficult in any case to convince a man that it will pay him in increased power per gallon gasoline, if he has better piston rings installed.

But show him

K-P 3 PIECE PISTON RINGS

and explain their superior qualities and you will find he buys. Show him how they make an exceptionally close fit between the piston and the cylinder, which is essential to high compression. Show him that the obviation of the one-piece ring with its leaky split joint also develops compression.

Then let him see the splendid finish and efficient working of the ring. Show him how the groove or side lock between the two outer sections at once make it superior of all piston rings. Tell him how this groove, by holding down the end of the rings, eliminates all trouble from scored cylinders.

K-P 3 Piece Piston Rings are the rings you should push, because they are the best. They give satisfaction, and satisfaction builds your business.

KEYS PISTON RING CO.

3017 OLIVE STREET ST. LOUIS, MO.

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$1000.00

For Sensible Letters

Next week there will be published, here, the full terms and conditions on which this sum may be won — perhaps a large slice of it by you. Only this much now: these letters will be submitted to A. A. A. officials.

(OVER)

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(*Continued from preceding page*)

Of course ⚲ saves gas.

Everything does that nowadays.

But ⚲ *does.* And then it saves power, tires, time, tempers and —sometimes—*life.*

It is nothing to patch on. It fits *in*—gets right down to the vitals of your car, reversing a hoary oversight of motor engineering.

Next week you'll know—if you don't know now.

Next week ⚲ will be explained adequately—*here.*

Next week all gasoleers will know how ⚲ makes a car or truck or tractor do what it ought to do.

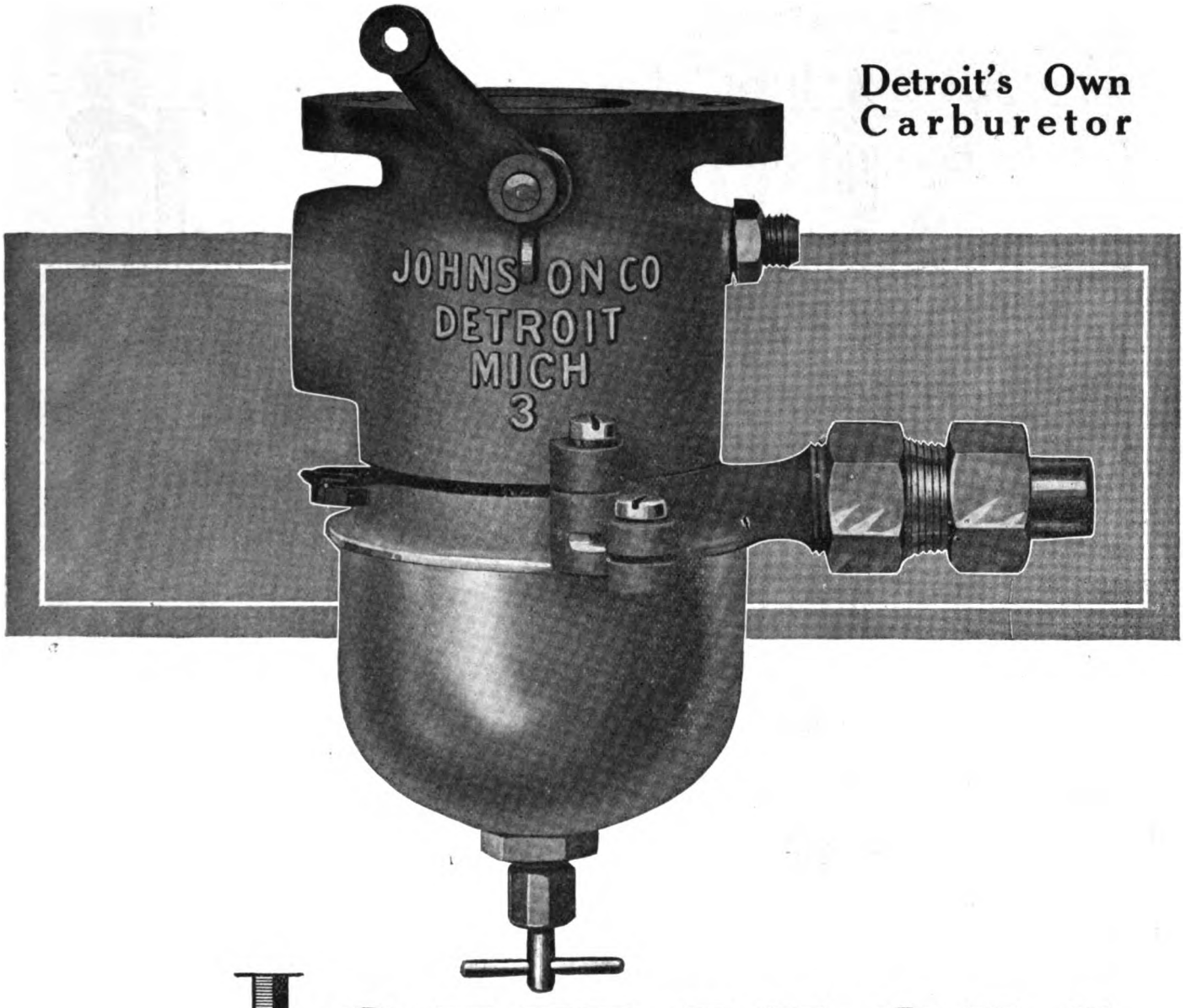
Next week the Story of ⚲ —the greatest advance in the **application of power,** since the gas engine was invented—will be public property.

If you can't wait a week, ask your neighbor. Perhaps he knows.

But—if you want *advance* information—
address Box P-7, Motor World, New York

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Detroit's Own Carburetor



JOHNSON CARBURETOR

Counts every drop of gasoline—and makes every drop count

JOHNSON COMPANY

Makers of Superfine Instruments of Carburetion

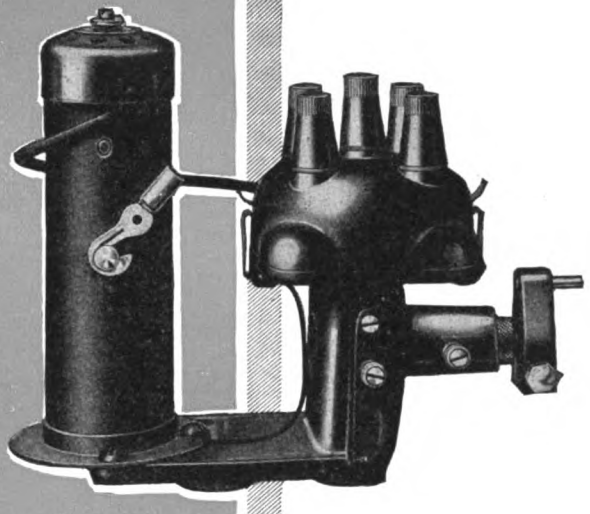
Detroit - - - - Michigan

When writing advertisers please mention Motor World

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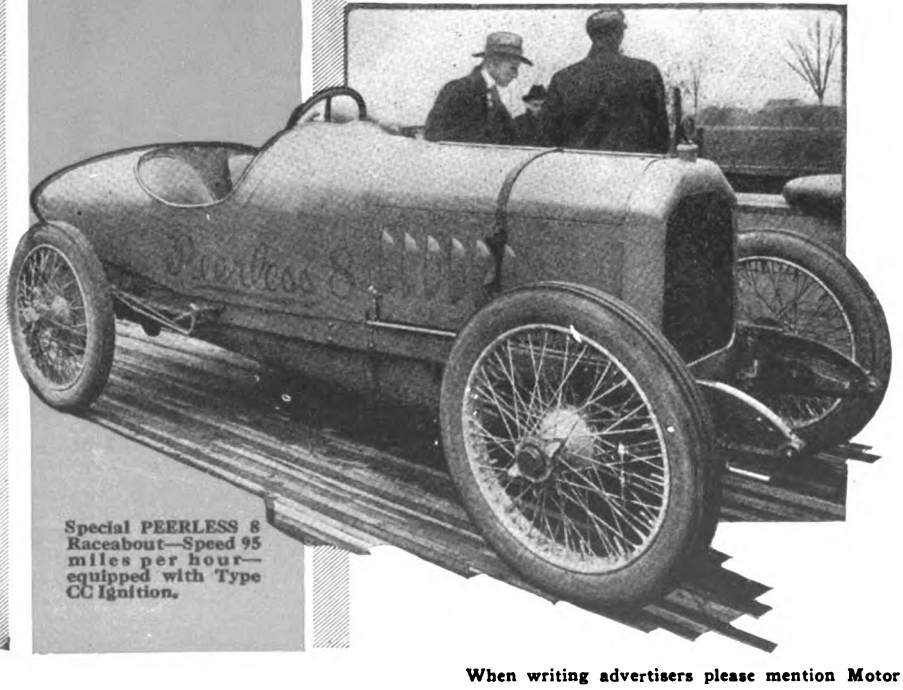
Atwater

Announcing Type CC *for* Magneto Replacement



Type CC
For Magneto Replacement

This new system, the most valuable contribution to scientific ignition practice of the past year, in addition to its use as standard equipment on many of the most prominent 1917 cars, is also offered as a magneto replacement outfit.



Special PEERLESS 8 Raceabout—Speed 95 miles per hour—equipped with Type CC Ignition.

The Atwater Kent Type CC Magneto Replacement outfit is intended especially for Maxwell, Overland and other cars provided with electric starting and lighting.

We also offer our K-3 Magneto Replacement system for use on cars **not** electrically equipped.

Dealers, accessory salesmen, garage and repairmen should write at once for full detailed information.

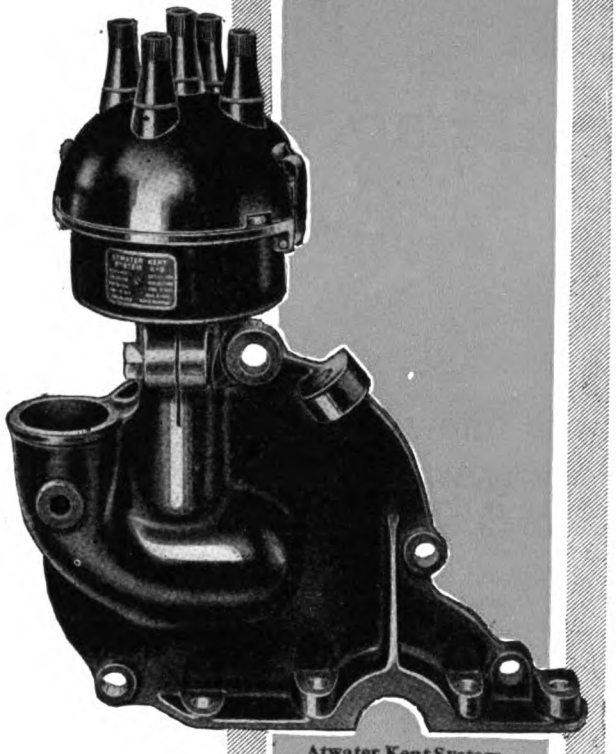
When writing advertisers please mention Motor World

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Kent Ignition

Eighty per cent. of all makes of cars manufactured during 1917 will be equipped with battery ignition—because of its greater efficiency. Not one car manufacturer adopting this type has ever gone back to the magneto.

Atwater Kent has pioneered this movement and Atwater Kent is today the standard by which all equipment of this type is measured. Atwater Kent is the only ignition for magneto replacement which is widely advertised and sold by jobbers, dealers, garage and repair men.



Atwater Kent System for FORD Cars.

Mr. Dealer: Are you the Atwater Kent authorized dealer in your territory? Are you in a position to furnish your customers with modern ignition in place of their magneto equipment? If not, write us for complete dealers' proposition and data.

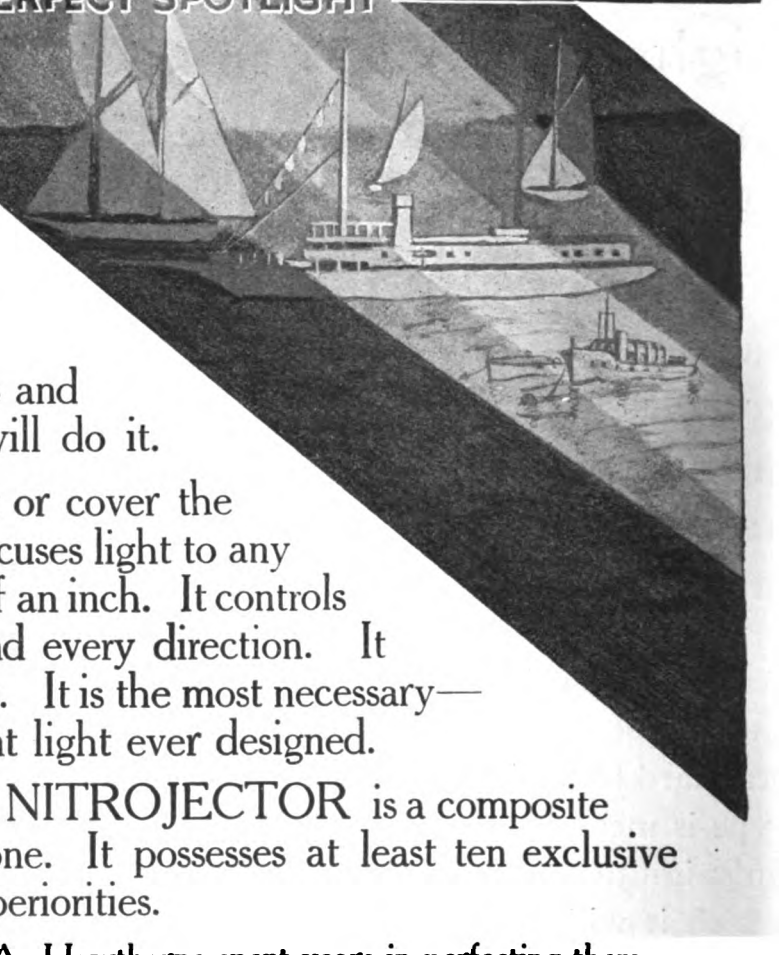


Atwater Kent Mfg. Works
Philadelphia, U. S. A.

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OLD SOL NITROJECTOR No 100

THE 100% PERFECT SPOTLIGHT



The Light That does Everything

Think of anything a light should do and OLD SOL NITROJECTOR will do it.

It will throw a brilliant spot of light or cover the roadway with a diffused light. It focuses light to any height desired and to the accuracy of an inch. It controls the light in any and every direction. It meets all State laws. It is the most necessary—the most convenient light ever designed.

The OLD SOL NITROJECTOR is a composite of every light in one. It possesses at least ten exclusive and remarkable superiorities.



PRICE $7.00

No. 70—Always a big seller. Many special features over all other Spotlights.



PRICE $5.00

No. 77—Just right for the smaller car with the exclusive features in No. 70.

The genius of Mr. E. A. Hawthorne spent years in perfecting them.

The trade-mark "OLD SOL" has always led in quality—in lighting advantages, but the new OLD SOL NITROJECTOR has set a standard for lighting device perfection.

Motorists will welcome its arrival. They will tell their friends about it. Sales will spread in volume and territory because it brings to every car owner, not only that sense of safety and "within the law" night driving, but also pleasure and convenience.

Canadian prices: Model 100—$15.00; No. 70—$10.50; and No. 77—$7.50.

HAWTHORNE MANUFACTURING CO., INC.

BRIDGEPORT, CONNECTICUT, U. S. A.

Makers of Old Sol Windshield Spotlights and Electric Lighting Devices

Digitized by Google

It complies with every law for a "no-glare" lighting device

Here are some of its exclusive features:— The cylindrical double shutter—three silvered reflector surfaces that extract the glare — an original focusing device —a universal bracket—the Old Sol crystal glass lens—nitrogen searchlight bulb — a switch plug integral with focusing device and operating handle —a pilot bulb—instant "on" and "off" control and a handsome torpedo body—five feet of finely braided duplex cable and copper terminals.

$10



OLD SOL
NITROJECTOR
MODEL 100



DEALERS—Here is a surprising profit making business for you. OLD SOL NITROJECTOR will be backed by a smashing national publicity campaign. Get in touch with your jobber at once and arrange for your first shipment. Every car owner in your community will buy one once he knows about it.

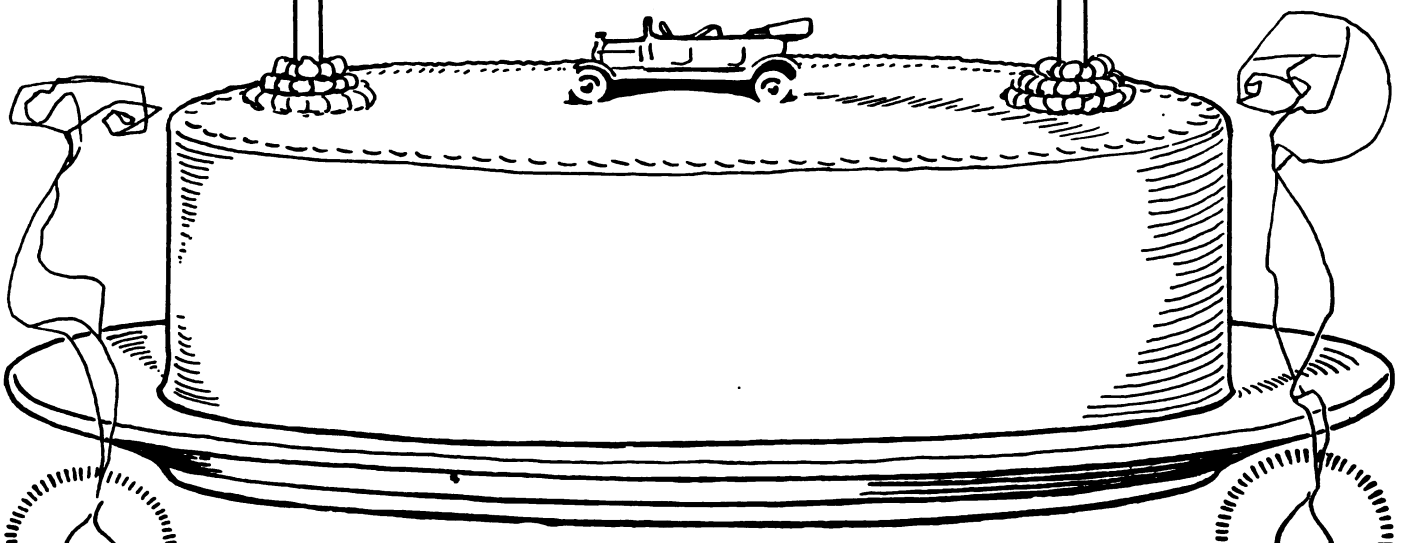
JOBBERS—If you are not already in a position to take care of your trade "get there" immediately. Write or wire us at once.

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Set of Four

Nationally Accepted
The Standardized Shock Absorber for Ford Cars

$10 Complete

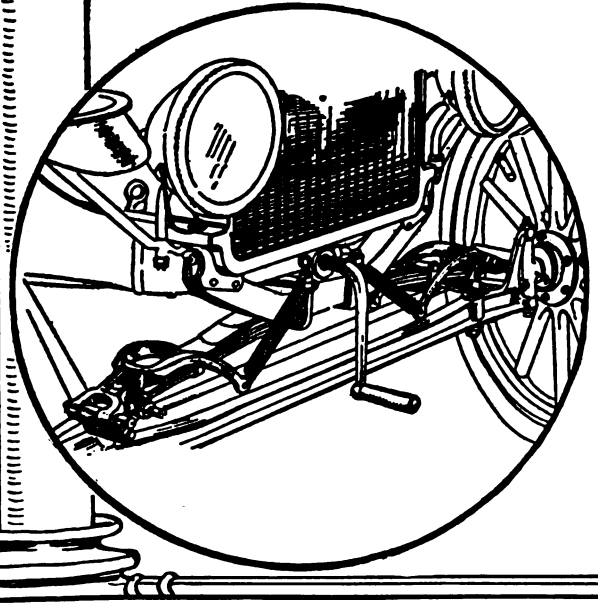


W & C

The Original Double Arm Shock Absorber Is But Two Years Old —And See What It Has Done

Practically every leading jobber in the United States **knows, stocks and catalogs** W & C Shock Absorbers.

Live dealers from coast to coast display, recommend and sell them to their best Ford Trade.



Thousands of Ford owners daily put their cars in the hands of W & C for safe keeping and easy riding on all kinds of roads, under all conditions. **Thousands more are ready to do so.**

W & C is not just another shock absorber for Fords. Its entirely new principle and construction are responsible for its remarkable achievement and unprecedented selling success. Jobbers and dealers who know W & C **push it—for profits.**

Write or wire today for complete details on this winter business booster—the big selling W & C.

Philip H. Webber & Company

HOOPESTON, ILLINOIS

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AN agency for Hood Tires is a valuable asset to your business because—

The Hood Tire is of such supreme quality that every sale means repeat orders and an increasing patronage through recommendation.

Our national advertising in newspapers, the Saturday Evening Post and other widely read magazines will send the right kind of buyers to where the Hood sign is prominently displayed. Write us regarding our exclusive agency proposition.

THIS IS A SIGN OF A HOOD DEALER



"Quality is Economy"

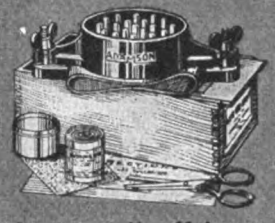
Hood Tire Co., Inc., Watertown, Mass.

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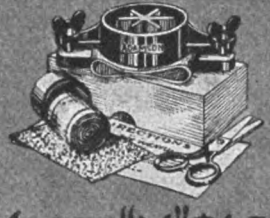
ADAMSON VULCANIZERS



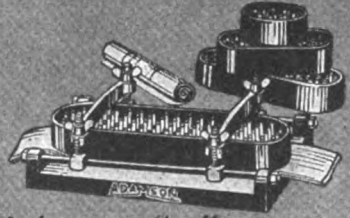
MODEL "U" $3.00



MODEL "T" $2.00



MODEL "M" $1.50



MODEL "S" $12.00

Our New Plant

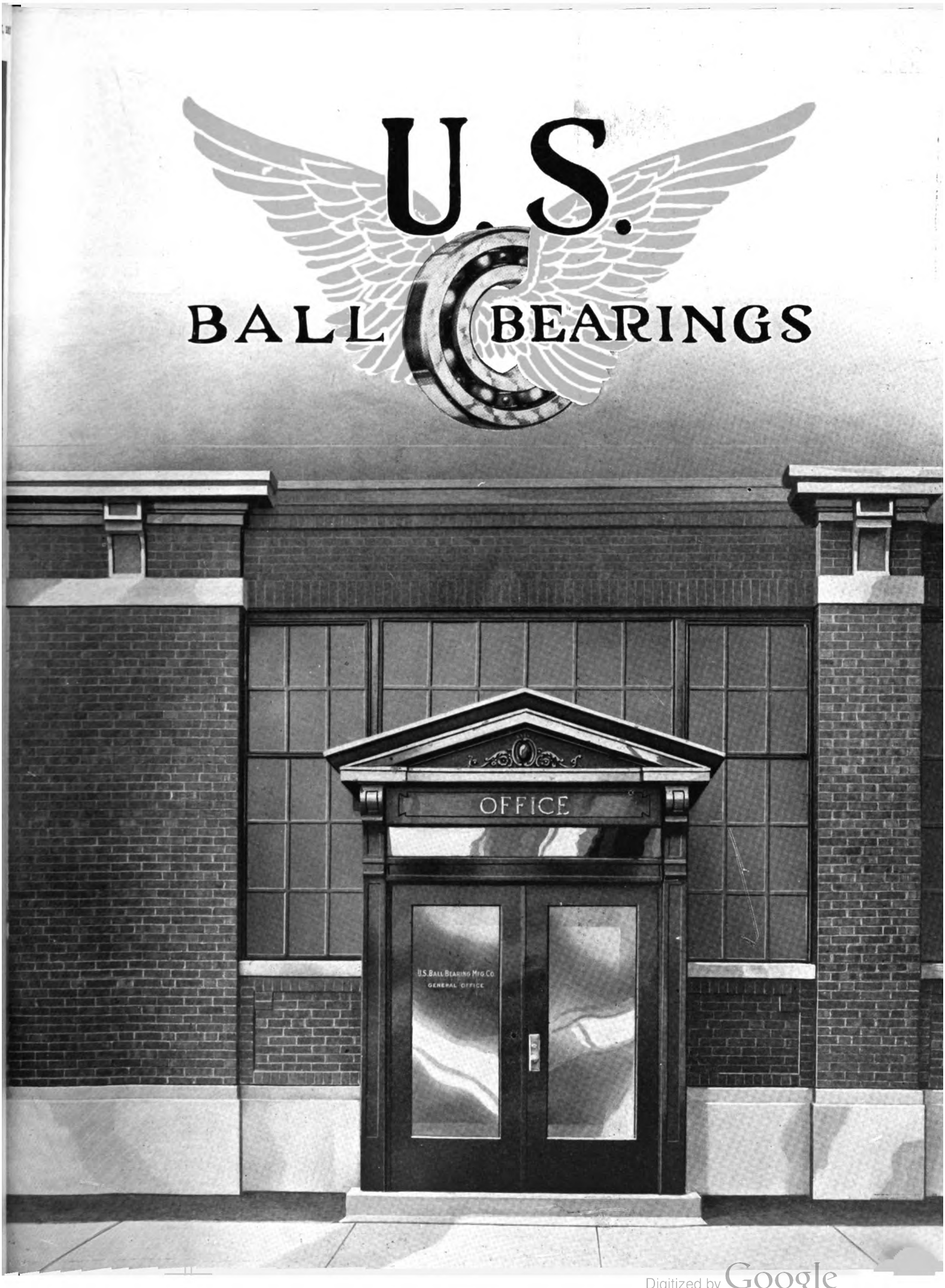
recently put into operation is one of the most modern and best equipped in the entire auto accessory industry.

With it we more than triple our output, in an effort to cope with the greatly increased demand for the Vulcanizers that outsell all others, year after year.

ADAMSON MANUFACTURING CO.
EAST PALESTINE, OHIO



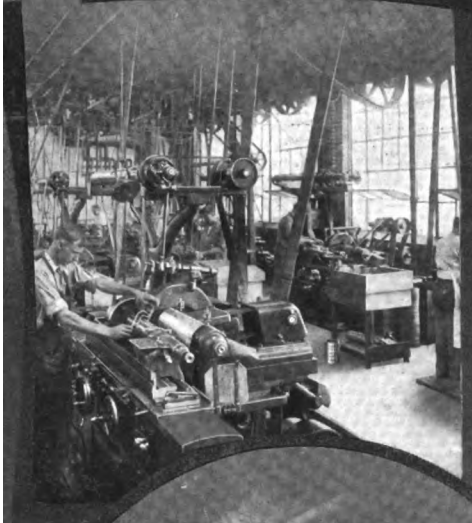
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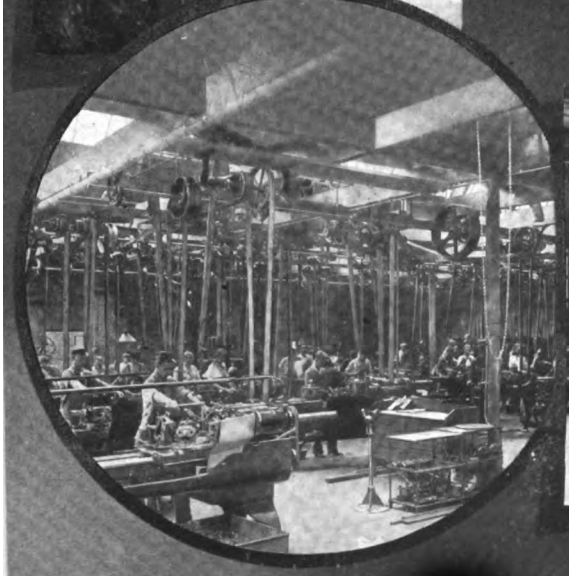


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U.S. BALL BEARINGS

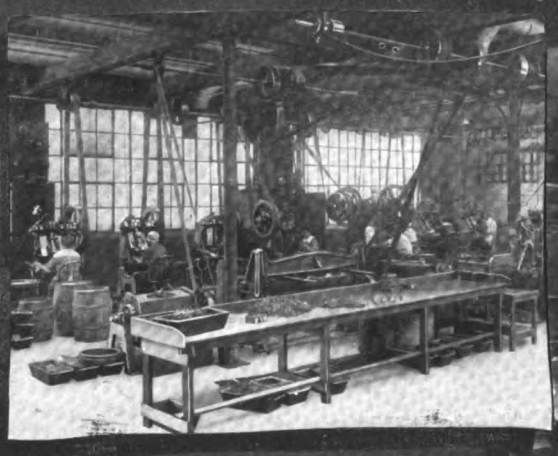
IT ISN'T ALONE the fact that the U S Ball Bearing factory is new and modern in every respect that has so much to do with the superior quality of U S Ball Bearings but also the fact that, being newly equipped, all the latest and most advanced manufacturing practices and equipment are in vogue.

¶ The ball bearing art has advanced greatly in the past few years and by planning and building to take advantage of all the more recent developments the U S Ball Bearing Mfg. Co. has been able to take advantage of every possible means and method of producing only bearings of the very highest quality.

¶ For it must be remembered that design and materials are fairly well established and the question of quality in a ball bearing—provided, of course, that the initial determination is to manufacture only a quality product—is largely one of care and precision in the manufacture of the product.

¶ This means first and fundamentally a physical equipment capable of turning out bearings manufactured within limits of a ten thousandth of an inch and then an inspection and checking system that will assure positive adherence to these limits.

¶ Such an equipment is that of the U S Ball Bearing Mfg. Co. Every known device and method looking to the realization of the highest ideal of bearing production will be found in this new and modern plant—





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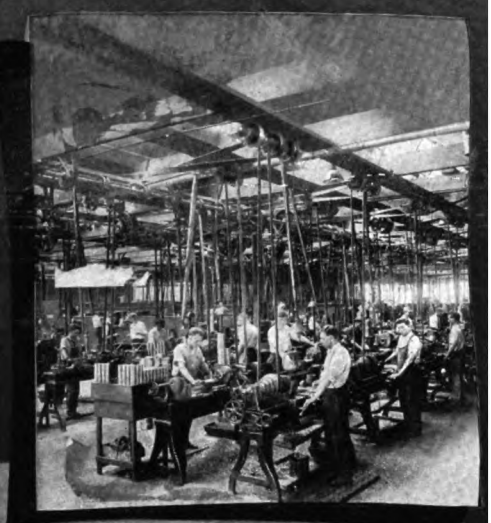
U.S.
BALL BEARINGS

so that we are able to say truthfully that every one of the bearings turned out of this 10,000-a-day factory is a quality bearing in all that the name implies.

¶ While the physical plant is new, attention is called to the fact that the manufacturing organization itself is composed of experts in the bearing manufacturing art. In other words, the man equipment is a unit of workmen who are old in the business—men who for years have done little else than make quality bearings. In fact, many of our workmen have been with us for the seven odd years we have been developing the present U S Ball Bearing organization.

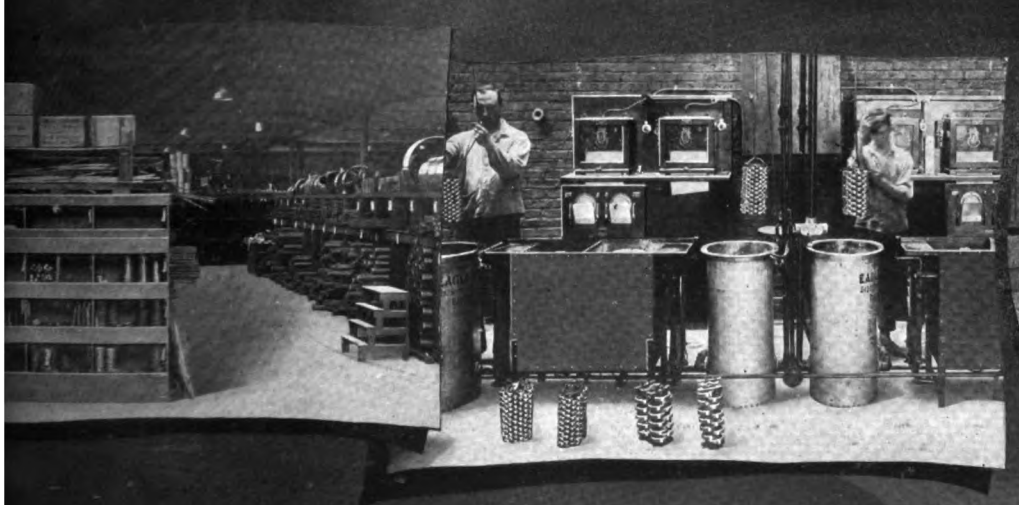
¶ The illustrations on these two pages show various departments of this new factory—and together with the view of the entire factory on the last page give some idea of the size and immensity of the plant. And practically every bit of this vast amount of equipment is brand new—and designed along the lines of the most recent development in the art itself.

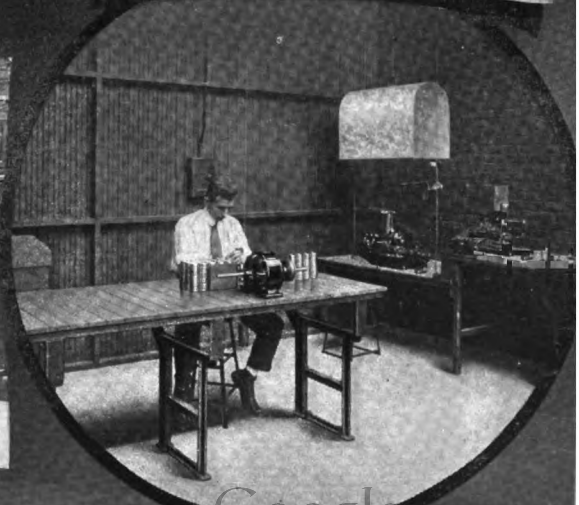
¶ Given then, first, a determination to produce only the finest ball bearings possible of manufacture—a factory new and modern in every respect as to its physical equipment—a manufacturing organization composed of experts who have worked and co-operated each with the other over a long period of time—a manufacturing plan which insists upon the use of only the highest grade of materials and a most thorough checking and inspection both of materials and manufacturing operations—and it is easy to understand why every U S Ball Bearing is a quality bearing.











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U.S.

BALL BEARINGS

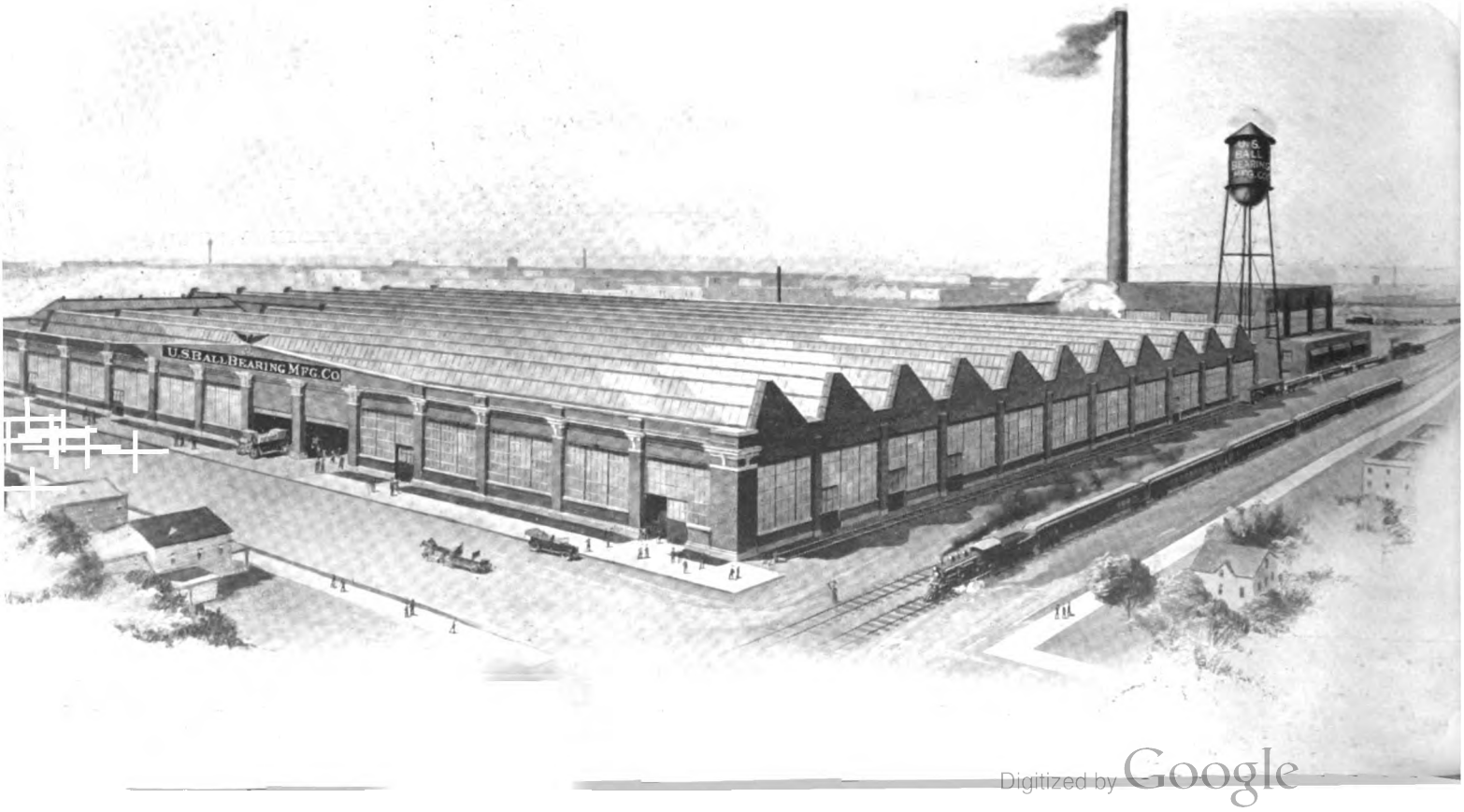
VERY visitor at the Chicago show is cordially invited to inspect the U S Ball Bearing factory shown herewith—this modern plant with a capacity of 10,000 quality bearings a day. Chicago show headquarters are in the Congress Hotel (Auditorium Annex).

U. S. Ball Bearing Mfg. Co.

(CONRAD PATENT LICENSEE)

PALMER ST. AND KOLMAR AVENUE

CHICAGO ILLINOIS



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KING 8

Can you Get More by Paying More?
is the question these cars will ask you

Four luxurious body styles on the refined Model EE sixty horse-power chassis—King designed, King built, with quality proved and improved by service experience the world over

TOURING—*7-passenger*—**$1585.** With all the advantages of a 120" wheel-base, this car has the roominess of a Six of 126 to 128, due to compactness of King V-type motor. Has many novel conveniences. Upholstery and finish of highest grade. Color: dark, rich green.

FOURSOME—*4-passenger*—**$1585.** Designed for those who desire the sport type of car, with long, low, rakish lines but in perfect taste. Narrow and "racy," this car seats four in comfort, has lengthy leg-room and is provided with four doors. Color: deep maroon.

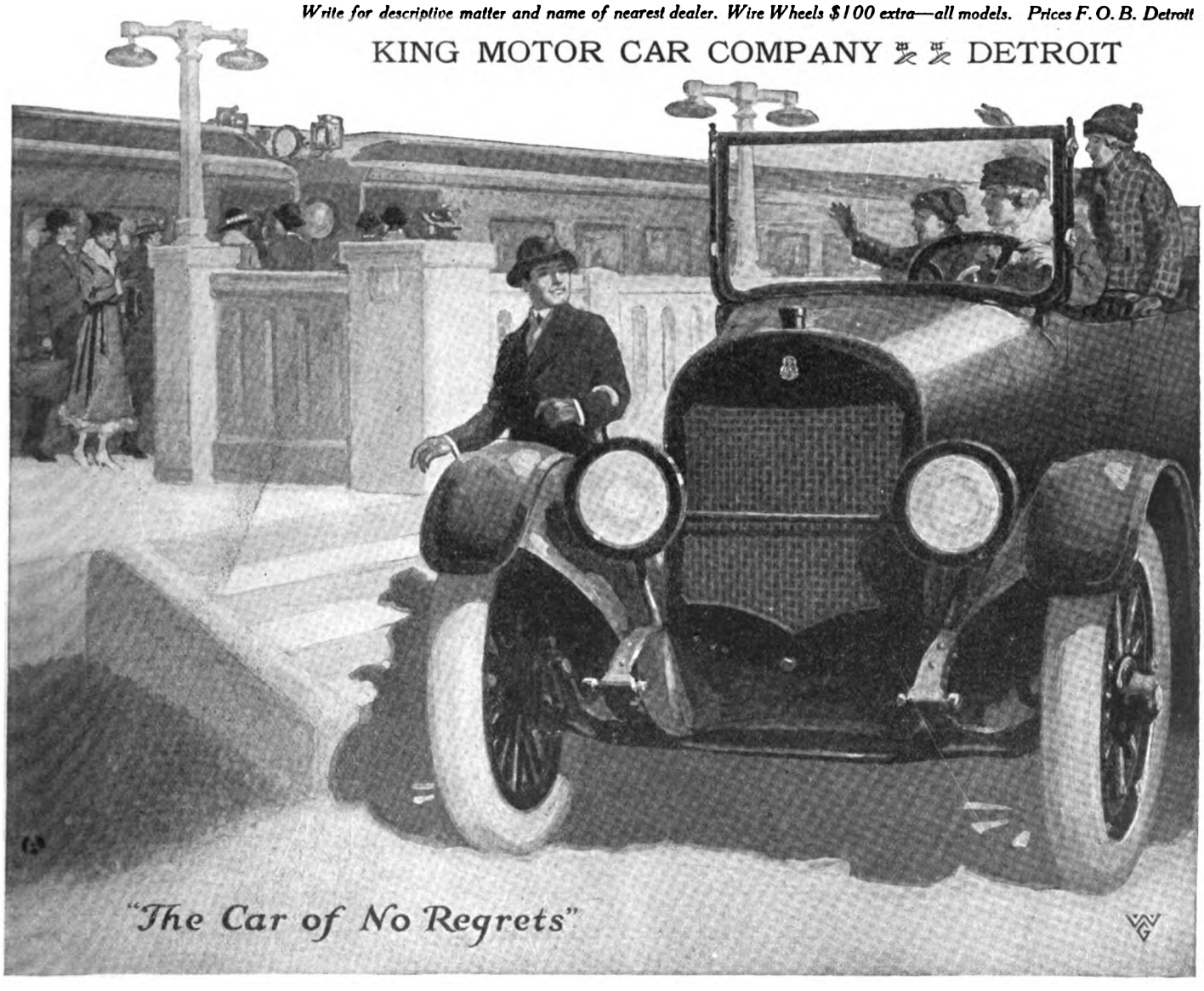
SEDAN—*7-passenger*—**$2150.** A year 'round car of the most luxurious type. Upholstered in highest grade cloth and has divided front seats. A real closed car, yet with sides completely removable. Three colors: beaver brown; deep maroon; suburban blue.

ROADSTER—*3-passenger*—**$1585.** Very popular with doctors and business men. Has large storage space and exceptionally graceful lines. Roomy and comfortable. Color: French gray.

ALL PRICES QUOTED MAY BE ADVANCED AT ANY TIME

Write for descriptive matter and name of nearest dealer. Wire Wheels $100 extra—all models. Prices F. O. B. Detroit

KING MOTOR CAR COMPANY DETROIT



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Kissel's original idea that changed the motoring habits of a nation

Every Month Pays Dividends to KisselKar Dealers

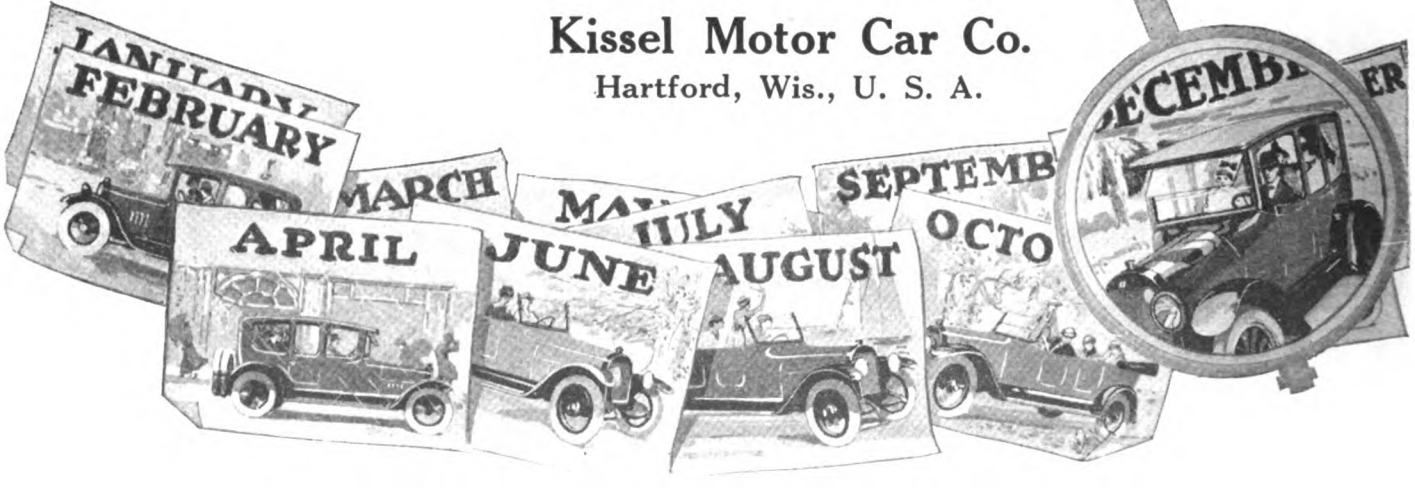
The ALL-YEAR Car is **not** a one-season-selling car. In January as in July the demand **never lets up. Every** month is a **selling** month for KisselKar Dealers—the ALL-YEAR Car is an all-year-around sales producer.

Wire or write us **today** for particulars regarding open territory where the **demand** for Kissel's ALL-YEAR Car insures a twelve-months-selling season.

See us at the Shows

Kissel Motor Car Co.

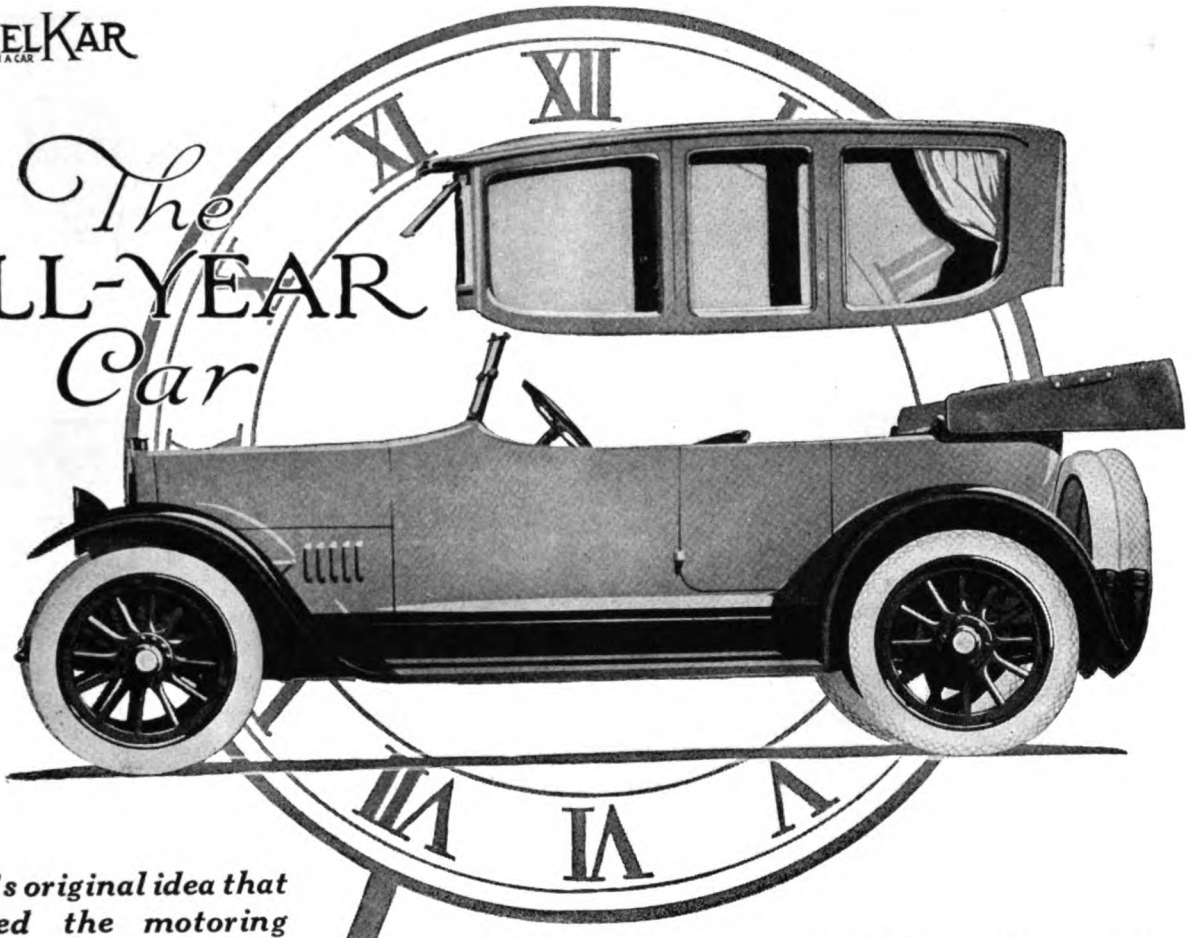
Hartford, Wis., U. S. A.



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KISSELKAR
EVERY INCH A CAR

The ALL-YEAR Car



Kissel's original idea that changed the motoring habits of a nation

The Logical Car for Every Month in the Year

For every **hour — day — week — month** — for every social function or business use—for **all** purposes in **all** seasons and all weather.

Not an **ordinary** convertible car—not a permanently roofed car. The ALL-YEAR Top is **built in,** not on. It is **completely removable** with no rattles or draughts.

See Kissel's original idea at all the important Motor Car Shows. Prices ALL-YEAR models, $1635 to $2100. Open cars $1195 to $1750.

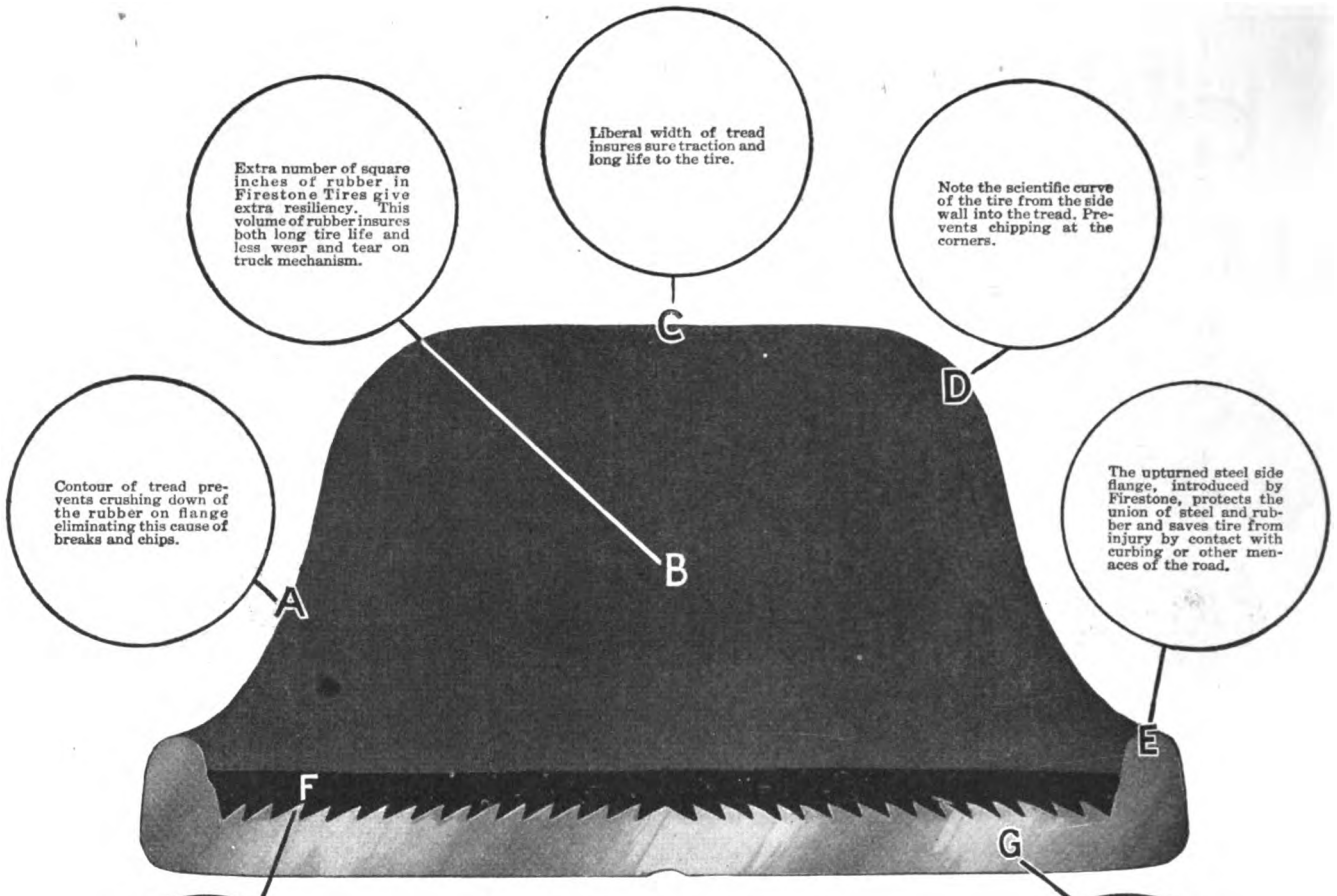
See it at the Shows

Kissel Motor Car Co.

Hartford, Wis., U. S. A.



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Cross Section Pressed-on Truck Tire

An Inside View

THIS section view of a pressed-on type of Firestone Truck Tire reveals the details of its construction. An inside view to enable you to form a more intimate and intelligent opinion of the merits of this type.

When pressed on to the wheel by means of an enormous hydraulic press, tire and wheel practically become a unit. Nothing can remove this tire except the same type of hydraulic press. An advantage of the pressed-on tire, aside from its grip on the wheel is its lighter weight.

Study the specifications, briefly outlined.

There is a Firestone Truck Tire for all roads, loads and conditions of service.

Will you make use of the services of one of our experts in the selection of your truck tire equipment?

FIRESTONE TIRE AND RUBBER COMPANY
Akron, Ohio Branches and Dealers Everywhere

Firestone TRUCK TIRES

When writing advertisers please mention Motor World

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Public Gets Extra Guarantee of 1500 MILES on all makes of tires— with no advance in price

If old guarantee is for 6,000 miles — the new guarantee gives you 7,500 miles
If old guarantee is for 3,500 miles — the new guarantee gives you 5,000 miles

Dann Insert Dealers are themselves giving the above extra mileage guarantee on all cars equipped with

DANN INSERT
"The Lubricated Spring-Leaf Bearing"

This is the best proof that Dann Insert increases the life of tires, and puts the money in YOUR pocket.

Dann Insert is a perfect spring leaf bearing of anti-friction bronze and is so constructed as to supply continuous and adequate lubrication to the entire bearing surface of the spring leaves from tip to tip. The bronze bearing metal reduces friction between the leaves to allow easy sliding of one leaf over the other. The graphite compound will not flow liquid and furnishes a lubricating surface that protects against rust and grit.

With Dann Insert you will get easy riding. We guarantee it—or your money back.

EVERY DEALER can have the same opportunity.

EVERY CAR OWNER is entitled to it.

Wire or write for particulars today.

THE DANN PRODUCTS COMPANY
(Formerly Dann Spring Insert Co.)
Makers of Dann Insert, the lubricated spring leaf bearing and Dannite, the oilless bearing.
1090 E. 152nd Street CLEVELAND, OHIO

M.W. 12-27

THE DANN PRODUCTS COMPANY,
1090 E. 152nd Street
CLEVELAND, OHIO

I am a {Owner / Dealer}

Please send me full particulars at once regarding the Extra Guarantee of 1500 Miles on Tires.
(If an owner, indicate car you own.)

Car.....

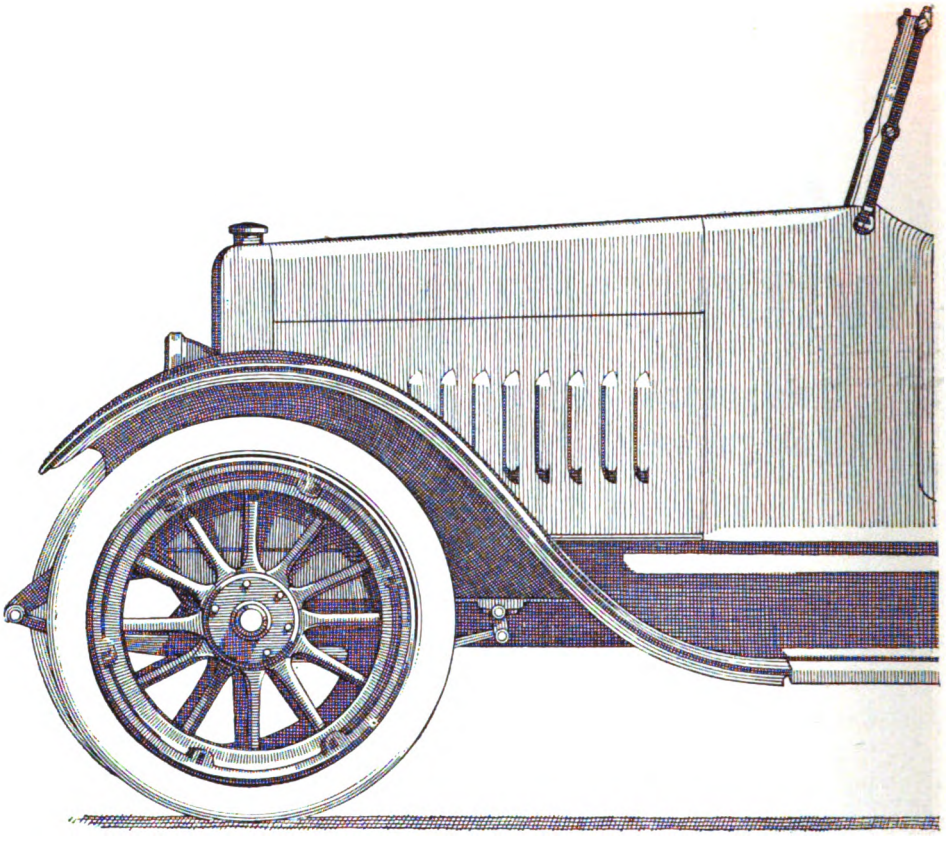
Model..... Year.....

Name.....

Address.....

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At 2000 revolutions per minute the Hal twelve cylinder valve-in-head motor develops 70 horse power (brake test); at 3000 revolutions per minute, 100 horsepower. Yet you will undoubtedly find the gasoline consumption to be as low as 10 to 12 miles to a gallon. The weight of the car is 3975 pounds. We believe the car not only weighs less by 500 pounds than other cars of the prevailing 12-cylinder type, but delivers 20 percent more power as well. Seven-Passenger Touring Car or Roadster, $2600. Limousine or Town Car, $4500. Touring Sedan, $3500. Prices f.o.b. Cleveland.

Hal Motor Car Company - Cleveland, Ohio

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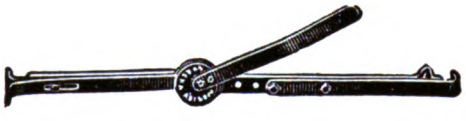
EUREKA
RIM COMPRESSOR

With the Eureka Rim Compressor you can remove tires from demountable rims in twelve seconds and can replace them almost as quickly. It is adapted to rims such as the Stanweld, Baker (new style), Kelsey, Firestone, Universal and others of the transversely split type.

The eccentric bearing and long handle of the tool give a tremendous leverage, which will split any rim with comparative ease.

There is absolutely no danger of pinching the inner tube, nor can the tool damage the rims or casing in any way. It is impossible for the tool to slip while you are removing the tires, as the lever locks when it is in alignment.

The Eureka Rim Compressor is made of 5/16 steel and is of extra strong, solid construction, well bolted and riveted. Adjustable to all sizes of rims. Parcel Post Weight, 5 lbs. Price, $3. Dealers or direct.



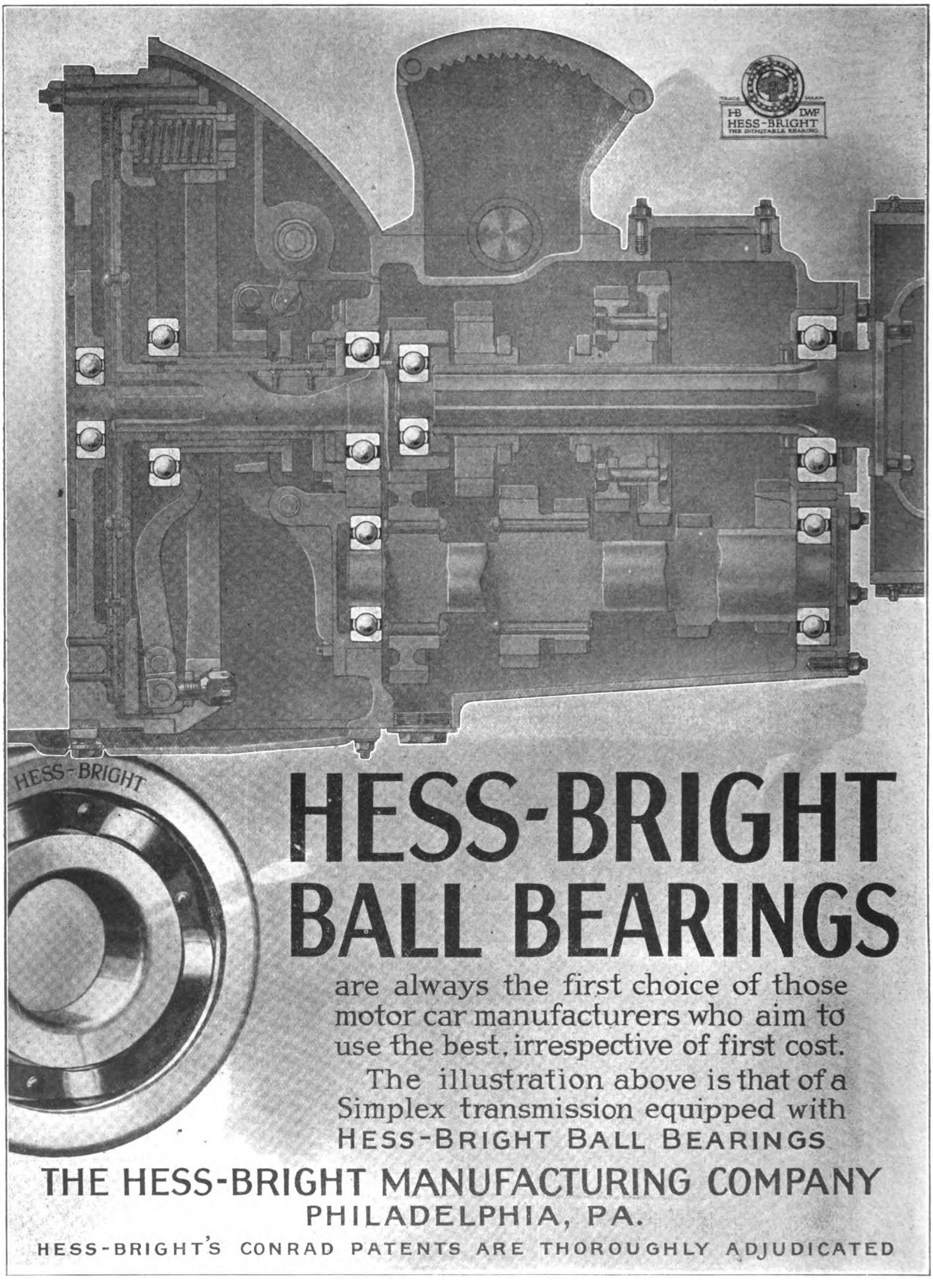
Eureka Rim Compressor
INCORPORATED
ADDISON NEW YORK

Chicago Auto Show, January 27th to February 3rd inclusive
Space 19, Armory Balcony

AN INVITATION

We want you to be sure to see the Eureka Rim Compressor demonstrated at the Chicago Auto Show, January 27th to February 3d inclusive. The tool can be seen in operation and full information concerning it secured in Space 19, Armory Balcony. A demonstration will convince you.

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HESS-BRIGHT BALL BEARINGS

are always the first choice of those motor car manufacturers who aim to use the best, irrespective of first cost.

The illustration above is that of a Simplex transmission equipped with HESS-BRIGHT BALL BEARINGS

THE HESS-BRIGHT MANUFACTURING COMPANY
PHILADELPHIA, PA.

HESS-BRIGHT'S CONRAD PATENTS ARE THOROUGHLY ADJUDICATED

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CHASE

1847 ---------- 1917

FOR SEVENTY YEARS the name of L. C. Chase & Co. has stood for leadership in manufacturing products of the highest quality, that live up to every representation; and for contracts invariably carried out.

IN ANNOUNCING

Leatherwove

"'Tis like the hide in most respects
In some respects 'tis better"

a new name for our special motor car upholstery that for a generation has stood the test—we wish to assure our friends that into this material we are putting every bit of quality that our years of experience and knowledge of the industry can produce.

LEATHERWOVE IS EXCEEDINGLY SMART IN APPEARANCE, being finished in the most attractive colors and styles of the highest quality leather.

IT WEARS LIKE IRON, and retains its good looks—its smooth, even finish—almost indefinitely. It will not blister, is stain proof, weather proof, fast in color, and can easily be cleaned with sponge and water. Wetting will not rot it.

WHILE LIKE THE HIDE IN APPEARANCE and durability, it is better than the hide in uniformity of quality and thickness.

IT IS FAR MORE ECONOMICAL FOR UPHOLSTERERS to handle, having no holes, tick marks, heads, shoulders, bellies, shanks, etc., which characterize the hide. Any number of thicknesses can be cut at one time. Being made in usable dimensions, not a bit of it is wasted.

ON REQUEST WE SHOULD BE PLEASED TO forward samples to manufacturers and others interested.

·L·C·CHASE & CO·
BOSTON
NEW YORK DETROIT CHICAGO

OTHER PRODUCTS OF OUR MILLS:
Plush Motor Robes, Wool Robes, Steamer Rugs, Mohair Motor Topping, Wexford Motor Cloths for Slip Covers, Rubber Cloths for Tops and Side Curtains, Felt and Rubber Radiator Covers.

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CHA



HERE IS A NATIVE OF THE PROVINCE OF ANGORA, Turkey. Many of his kind have migrated to this country, and Uncle Sam is now shepherd to large flocks of these silky-fleeced animals.

WITH THIS FUNDAMENTAL ADVANTAGE in the matter of raw material, and aided by long experience and improved methods of weaving, our mills are turning out Mohair products of surpassing richness, durability, fineness of texture and adaptability to upholstery purposes.

"CHASE" MOHAIR VELVET IS COMPOSED OF CHOICE ANGORA HAIR, resilient, strong and clean, carefully woven into a pile of extraordinary thickness.

ITS SURFACE IS PLEASANT TO TOUCH, BEAUTIFUL TO SEE, and next to impossible to wear out, as the wear comes on the top ends of the fibres. Far from being the easily damaged material it seems, "Chase" Mohair Velvet is more wear resisting than any other fabric. Because of the smoothness of the fibre, it is not easily soiled and can be quickly and thoroughly cleaned by modern methods without the slightest injury.

·L·C·CHASE & CO·
BOSTON
NEW YORK DETROIT CHICAGO

MOHAIR

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ASE



FOR USE IN MOTOR CAR UPHOLSTERING, this material is unquestionably without an equal. It can be furnished in any tint or shade of color, in almost unlimited variety of surface design. It affords that rare combination—great beauty and extreme durability in service.

YOU DO NOT SLIDE TO AND FRO when sitting on "Chase" Mohair Velvet. You ride firmly seated, comfortably, luxuriously, without weariness to yourself, or shine and wear to your clothing.

IT IS IMPORTANT TO REMEMBER, in considering the question of upholstery, that the Pullman Company, after trying everything triable in the way of upholstery for their parlor and sleeping cars, have standardized Mohair Fabrics as the most durable, sanitary, easily cleaned and altogether satisfactory material available.

VELVET

OTHER PRODUCTS OF OUR MILLS:
Plush Motor Robes, Wool Robes, Steamer Rugs, Mohair Motor Topping, Wexford Motor Cloths for Slip Covers, Rubber Cloths for Tops and Side Curtains, Felt and Rubber Radiator Covers.

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CHASE



Motor Topping

"CHASE" DREDNAUT MOTOR TOPPING is the logical result of a thorough knowledge of the exact requirements of an ideal top-covering, a knowledge gained through thirty years' experience in manufacturing top material. It is made with the same skill in workmanship, the same unerring judgment in selection of raw materials, the same careful attention to detail, that have characterized "Chase" products for 70 years.

IT IS EXCEEDINGLY HANDSOME IN APPEARANCE, and retains that appearance. A sponge and water are all that is needed to remove the stains of travel. Creaseless—it *comes back* after folding, holding a smooth, even surface.

OF EXACTLY PROPER WEIGHT AND TEXTURE, a Drednaut covered top is easily handled by the motorist.

PROOF AGAINST ALL WEATHERS and durable far beyond the ordinary top material, "Chase" Drednaut Topping in many instances outlasts the car itself. It is universally popular, being in use on more individual cars than any other sort of top cloth.

MANUFACTURERS FIND THAT "CHASE" DREDNAUT MOTOR TOPPING adds to the beautiful appearance of their cars, that it is practical in manufacture, economical to make up, neat, clean and easily kept clean.

JOBBERS FIND IT A GOOD SELLER—it will outsell any other cloth simply on looks, and its sterling quality holds every customer who has once bought it.

TOPMAKERS FIND THAT IT WORKS UP WELL, makes a neat, fine, high class job, and makes permanent friends among their customers.

·L·C·CHASE & CO·

BOSTON

NEW YORK **DETROIT** **CHICAGO**

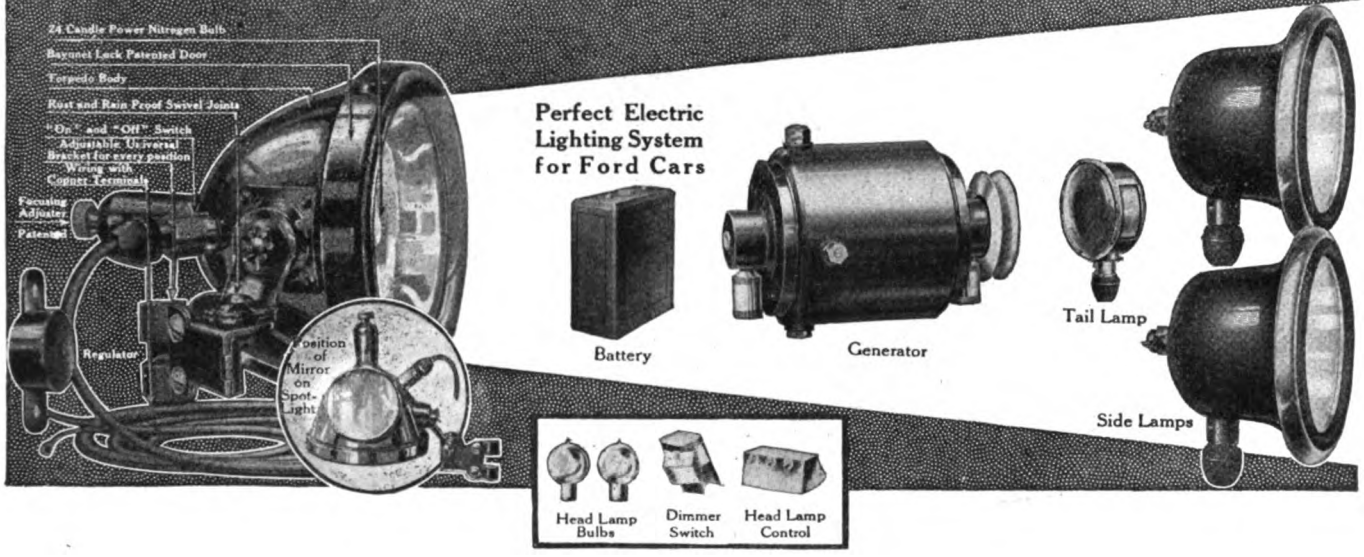
OTHER PRODUCTS OF OUR MILLS:

Plush Motor Robes, Wool Robes, Steamer Rugs, Mohair Motor Topping, Wexford Motor Cloths for Slip Covers, Rubber Cloths for Tops and Side Curtains, Felt and Rubber Radiator Covers.

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ELECTRIFY YOUR FORD

FROM HEAD LAMPS TO TAIL LAMP IN TWO HOURS



The Biggest Sales Producing accessory of the year 1917—Hundreds of Thousands of Ford Owners want it. The Greatest Dealer Opportunity ever offered.

VERSAL PRODUCTS UNIVERSAL CAR

GENOLITE, Type "C" $29.85

Dealers—There never has been an electric lighting system that you could offer your customers to equal this. Unlimited sales are assured through the completeness of the system, its low price and the big national advertising back of it. System consists of adequate Generator, Storage Battery, Two Handsome Electric Side Lamps, Electric Tail Lamp, Dimmer Switch on Steering Post for Head Lamp Control, Two Extra Nitrogen filled Bulbs, a Complete Electric Lighting System that will add immeasurably to the comfort and convenience and safety of Ford Owners. No machine work required to install, no expert needed.

GENOLITE, Type "D" $31.85

Here is the complete and Perfect Electric Lighting System that meets every exacting requirement of night driving. In addition to an equipment that electrifies the Ford from Head Lamp to Tail Lamp there is a windshield Spotlight as good as the best on the market and possessing many superior exclusive features. Every Ford Owner will want this system once they know about it. Remember, the system includes two handsome Electric Side Lamps, Electric Tail Lamp, Generator, Storage Battery, all wires and connections and a beautifully finished, scientifically designed spotlight.

DYNOLITE, $6.85

This is the Windshield Spotlight Ford Owners have been waiting for. It is the first and only practical spotlight ever made exclusively for the Ford Car. Lights the roadway with a sunlike beam hundreds of feet ahead, behind or around the car. Has patented focusing device, strong universal bracket adjustable to all positions, large mirrorscope for day driving, regulator that provides a steady flow of current at all speeds, duplex cable with copper terminals and 24 c.p. Nitrogen bulb.

CONSTOLITE, $4.85

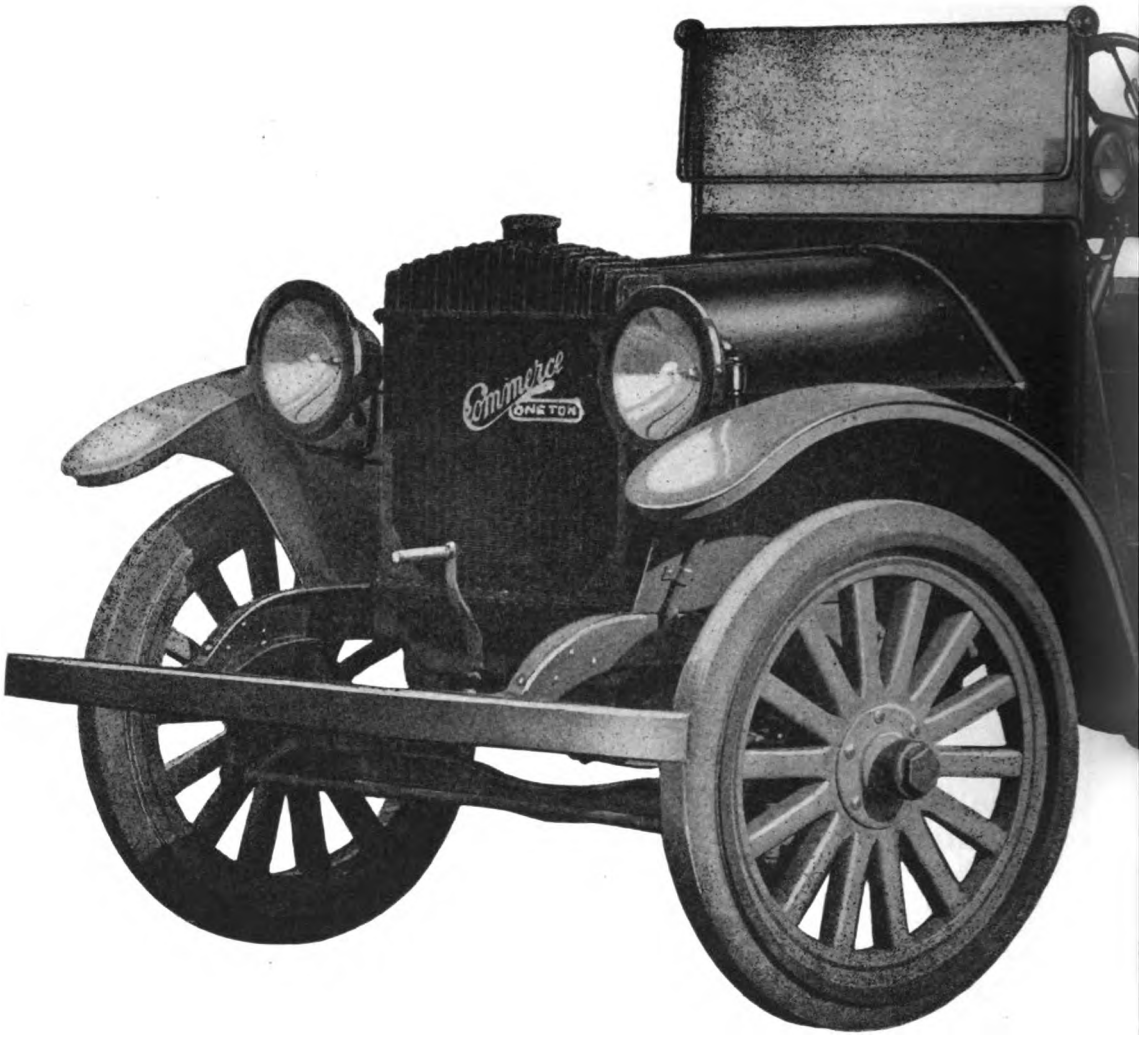
Every Ford Owner needs Constolite for night-driving comfort and safety. Regulates flow of current from Magneto to head lamps. Is operated by dimmer switch on steering post. Provides a practically unvarying light at all engine speeds. Gives full candle power at low speeds. At abnormal engine speeds automatically cuts down the glare. Dims lights at will of driver. Immediate and assured sales are yours, Mr. Dealer, as soon as your allotment arrives.

Write at once for these Versal Products for the Universal Car. Address Dept. D.

The Detroit Starter Co., Detroit, U. S. A.

Our Reputation is Your Guarantee

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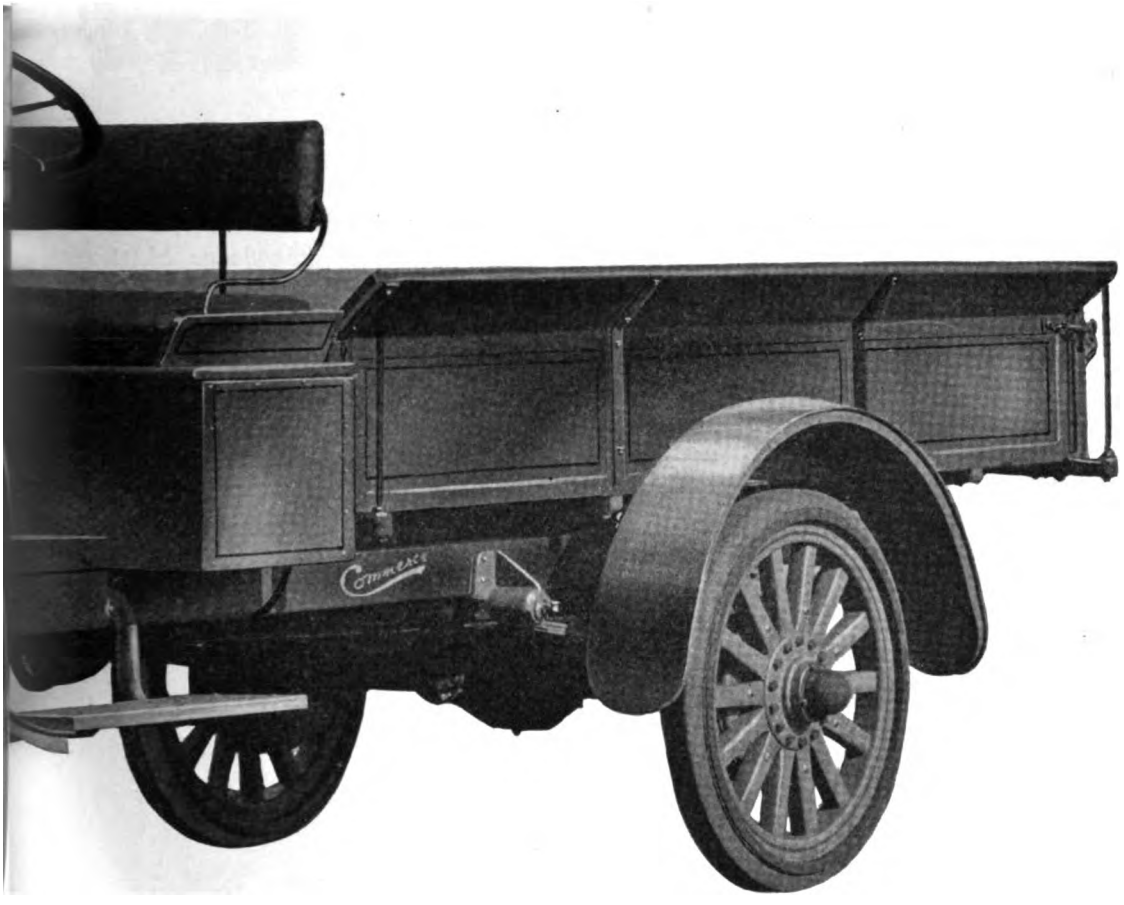


A Year Ahead of Other Trucks!

Commerce

One Ton Completely equipped with Starting and Lighting System, Windshield, Stewart Vacuum System, Bumper, Pierce Governor and Open Express Body—Internal Gear Drive. **$1175**

Digitized by Google



COMMERCE TRUCKS are fully a year ahead of every other truck in point of complete equipment.

And this equipment is **needed!** Don't make any mistake about that. **Next** year, and the year after, you will see truck after truck falling into line, with complete equipment.

But none of the others have it NOW! Some of them have selfstarters; some have lighting systems, some have bumpers, others have spotlights—

But the Commerce Truck is the only one that has **ALL** of these things (and several others, including a windshield) **NOW—TO-DAY!**

So, if you want a truck to use now, or this year, buy a Commerce. It's the same price—and that price **INCLUDES** all this necessary equipment. You don't have to pay extra for it, and wait for it to be put on.

The Commerce is sold as a complete truck, ready to get in and drive off. Three types of bodies furnished. Handled by leading dealers all over the United States.

DEALERS: This is an especially strong point for **You!** If you are going to sell a complete truck, why not sell it **now**—instead of **next** year? Give your customers a 1918 truck **this** year. They will appreciate it. We give you generous terms—and the **shortest**, clearest Dealer's Agreement you ever saw.

Look at These—Included in the Price!

A wind shield. Remy Starting and Lighting System. A Spotlight. A Bumper (integral part of frame). Large Searchlights fitted with dimmer lamps. Stewart Vacuum System. Pierce Automatic Governor.

And at These Indications of Quality!

Continental Motor—Torbensen Internal Gear Rear Axle—Cast Tank Radiator with removable core—Truck Type, Roller Bearing, Front Axle—Unit **Transmission**, special truck type—Detroit Steel Products Company Springs. These, together with a special truck frame and fittings such as are usually found in a truck of 2 tons' capacity, are the principal units that enter into the construction of the "Model E" Commerce 1-ton Truck.

¾-Ton model, $975. Supplied with 3 types of bodies.

Commerce Motor Car Company

DETROIT **MICHIGAN**

W. H. Brinkerhoff, Eastern District Manager, Belmont Avenue, Elmhurst, Long Island, N. Y.

When writing advertisers please mention Motor World

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Real Worth

"What is it worth?" is often confused with "What is the price?" by those who do not think deeply.

But worth is a term indicating intrinsic quality, honesty of materials and construction, reliability in performance.

Price is purely relative, depending on temporary considerations—it is low when labor and materials are cheap, high when they are high.

Willard advertising has been first to tell car owners frankly what constitutes real worth in a battery, and why it cannot be cheapened without jeopardizing car owners' satisfaction. Willard Batteries have never been built to meet a price but to preserve that intrinsic quality no matter what the temporary cost of rubber, lead or labor.

Over a million Willard Batteries in use indicate public approval of that policy.

Proper Care

Batteries must not only be well built, they must be well cared for. Fortunately this care is not difficult, nor does it require much time on the part of the owner.

But it does imply some knowledge of the operating of a starting and lighting system, of the causes of battery troubles and how to avoid them.

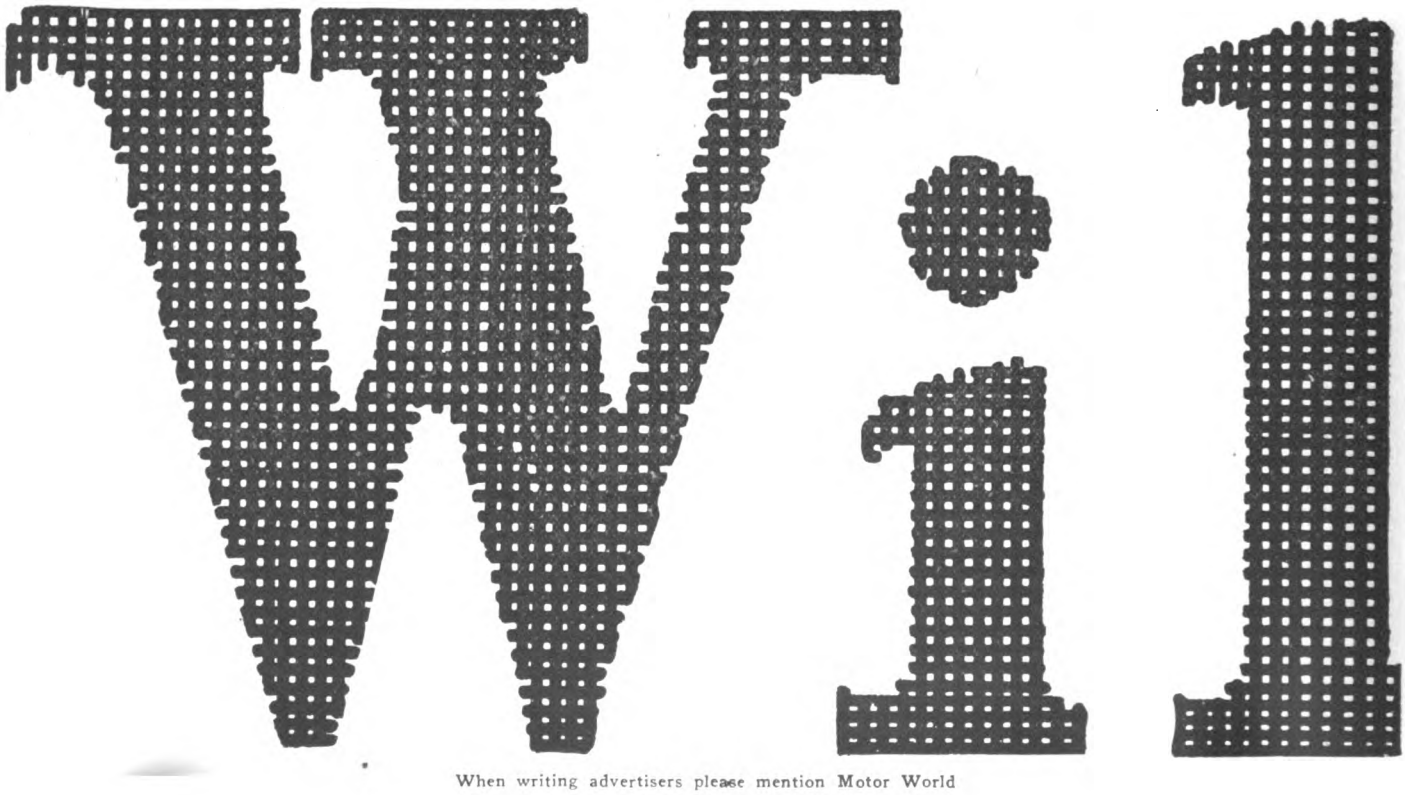
Willard advertising has been the first great national campaign of education by which car owners have learned these things.

It has already brought about a better understanding of the storage battery and saved car owners thousands of dollars that might otherwise have been spent for unnecessary repairs and replacements.

Below is one of many Willard advertisements that have given real information to millions of car owners.







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Expert Help

Even the best of batteries with the best of care will wear out some day.

Even the best of starting and lighting systems will sometimes get out of order and injure the battery.

Even the most careful of car owners may sometimes make unreasonable demands on his battery.

Then he needs expert help, for service by the ignorant or the amateur is often worse than no service at all.

Therefore, Willard maintains Service Stations at which are Willard-trained experts, able to give reliable advice, competent to charge, repair or rebuild a battery.

If every new car owner would visit the nearest Willard Station *as soon as he gets his car,* without waiting till he has trouble, batteries would last longer.

And this is, in fact, becoming common practice.

The Result

Year after year the overwhelming majority of the builders of Electrically Equipped Cars include Willard Batteries in their regular equipment.

Abbott-Detroit
Allen
Am. La France
Am. Standard
Ames
Amplex
Anderson "Six-Forty-Six"
Anger
Apperson
Argo
Armleder
Atterbury
Auburn
Austin
Avery

Bartholomew
Bell
Blumberg
Brockville Atlas
Brockway
Bull Moose
Burford

Case
Chalmers
Chandler
Chevrolet
Cozy Flyer
Colby
Coleman
Commerce
Consolidated
Crane
Crow
Cunningham
Cutting

Daniels
Dart
Davis
Day-Elder
Denby
DeDion-Bouton
Detroiter
Dile
Dixie Flyer
Dodge Bros. Motor Car
Dort
Drexel
Drummond

Eagle-Rotary
Elcar
Empire
Excelsior

Farmack
Federal
F. I. A. T.
Fisher
Fostoria Light Car
Franklin
Front Drive
F. W. D.

General L. C. E.
Gersix
Glide
Gramm
Gramm-Bernstein
Grant
Great Western

Halladay
Hanger
Harwood-Barley
Haynes
Herff-Brooks
Hollier "Eight"
Houghton
Hupmobile

Imperial
Indiana
Inter-State

Jackson
Jones

Kelly
Kentucky
King
Kissel-Kar
Kline
Knox

Lane
Lexington
Liberty
Lippard-Stewart
Locomobile
Lozier
Luverne
Lyons Atlas

McFarland Six
McLaughlin
Macsar
Madison
Marion
Marmon
Martin
Mason
Meteor
Metz
M. H. C.
Mitchell
Moline Knight
Monarch
Monitor 4-30, 6-40
Monroe
Moon
Murray

National
National Motor Truck (Canada)

Ogren
Old Hickory
Overland
Owen Magnetic

Packard
Paige
Patterson
Pathfinder
Peerless
Penney
Pilgrim
Pratt
Premier

Reo
Republic
Richmond
Riddle
Roamer

S. G. V.
Sandow
Sayers Scoville
Scripps-Booth
Simplex
Singer
South Bend
Spaulding
Stafford
Standard
Stanley
Stearns
Stephens
Sterling
Studebaker
Stutz
Sun

Thomas

Union

Velie

Westcott
Willys-Knight
Winton

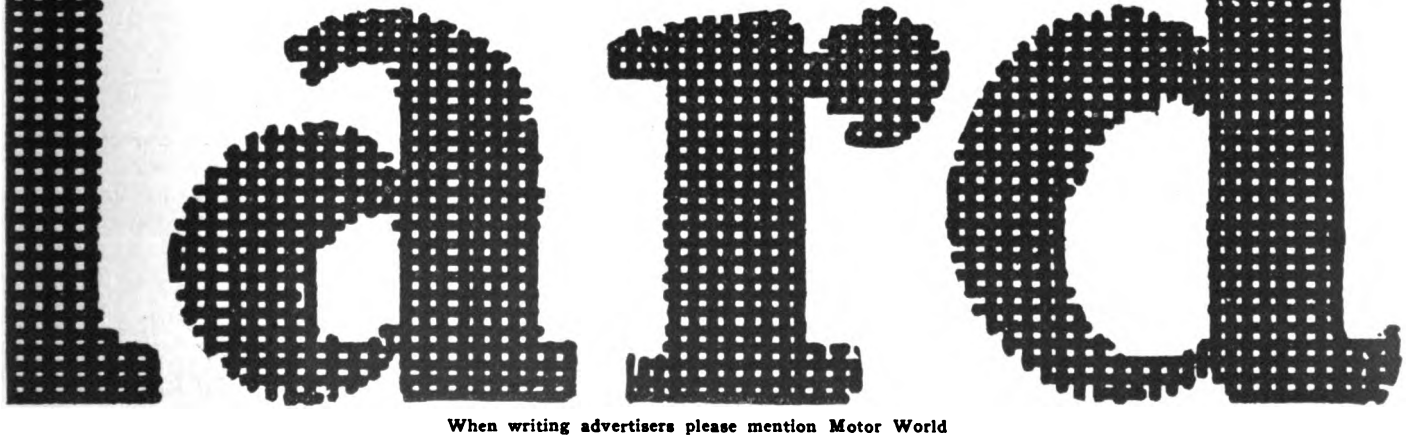
Zimmerman

Willard Storage Battery Company
Cleveland, Ohio



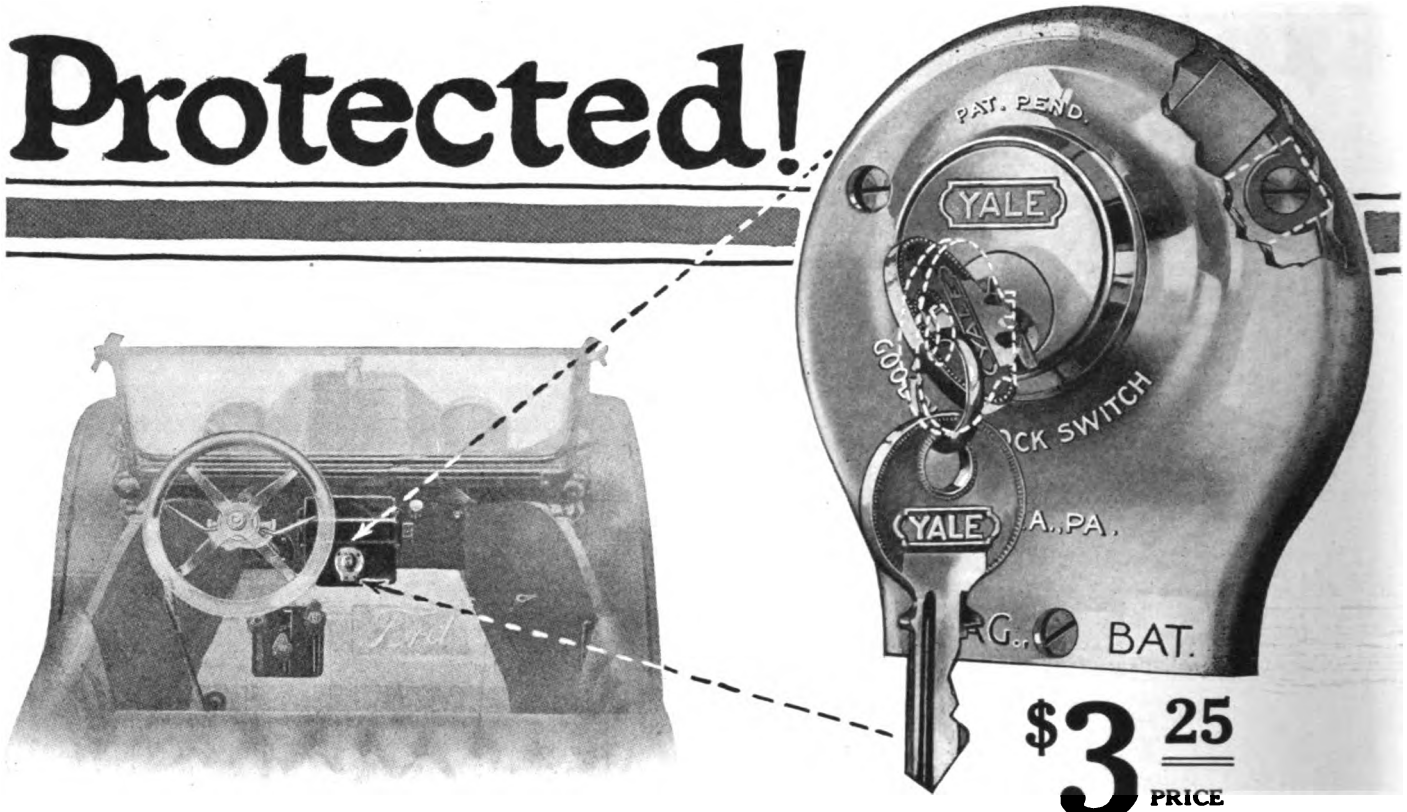


STORAGE BATTERY



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Protected!



$3 25 PRICE COMPLETE

$4.50 in Canada

FOR FORDS **Goodrich** YALE LOCK AND SWITCH FOR FORDS

The largest selling Ford Ignition lock switch in the World.

The safest, surest form of protection against car burglars and joy riding borrowers.

Not to be confused with ordinary ignition locks, for the Goodrich Lock and Switch possesses distinctive, patented features not to be found in any similar device.

To install, merely unscrew the brass plate that covers the regular Ford Ignition Switch and put this on in its place. It fits perfectly, screw holes and all.

It is un-pickable and when locked cannot be unscrewed from the coil box, for the same turn of the key that locks it also covers the screw heads with concealed Metal Shutters (See Illustration).

One turn of the key locks turns off the ignition and securely locks the car. No other key in the World but yours can unlock it—for each switch is Yale lock equipped.

For sale by all good dealers and jobbers—or write direct.

Why Ford Owners Buy This Lock

1—Offers surest protection.
2—Cannot be unscrewed or bridged.
3—Easiest to install—takes two minutes.
4—No combinations to remember.
5—No padlocks or other contrivance to tinker with.
6—Equipped with the efficient, un-pickable Yale lock.
7—Automatic in operation.

Dealers

Buy from your nearest jobber or write direct for dealer's prices, sales helps, free demonstrating display, etc.

GOODRICH-LENHART MFG. CO.

Succeeding Goodrich Accessory Association

1118 WIDENER BUILDING PHILADELPHIA, PA.

When writing advertisers please mention Motor World

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Get in

On the Ground Floor

—of **quickest** starting—**smoothest** acceleration—**greatest** flexibility—**swiftest** speed—**mightiest** power **and** the utmost of fuel economy—that can be obtained from **your** car.

The New Stromberg Carburetor

—opens wide the way and **keeps** it open.

It has shattered **all** records for fuel savings—increased mileage—speedy get-aways—and development of **driving force**—over the world's worst roads—under **severest** car-killing weather conditions.

And this performance of promoting **100 per cent car efficiency**—**minimum** cost and care of operation—**maximum** speed, mileage and power is perpetual. The excellence of construction and unfailing **accuracy** of operation of the New Stromberg assures actual day-after-day delivery of the highest known standard of carburetor action—on **any** car—under **any** road or climatic condition.

See it at the Chicago Show and be convinced.

If you do not attend the Show be sure to send for interesting information. Give **name** and **model** of your car.

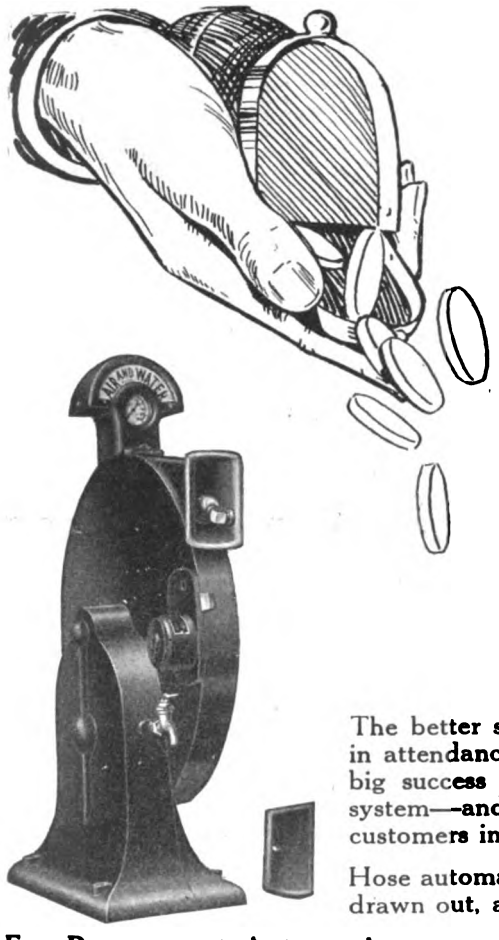
Stromberg Motor Devices Co.

Dept. 128A, 64 E. 25th Street Chicago, Ill.

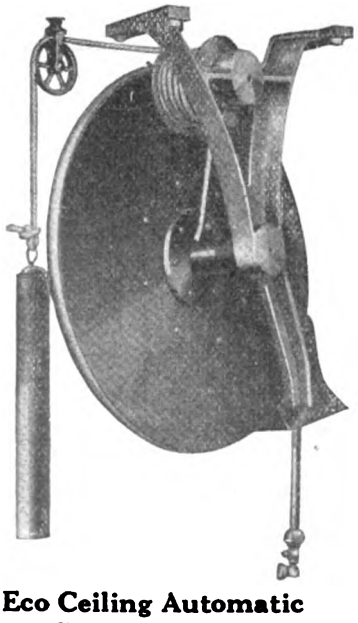
New STROMBERG Does it!

CARBURETOR

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Eco Prepayment Automatic
Air Station—Outdoor Type
Price $75.00
Same For Free Air—Price $70.00



Eco Ceiling Automatic
Air Station—Spring Type
Price $37.50
Counterweight Type—Price $30.00

ECO

Prepayment Automatic Air Station

Brings The Kind of Trade That Buys

Garagemen operating Free Air Stations will agree with you, that the average Free Air Patron considers his obligation paid when his tires are filled—and when he wants to buy he buys where he wants to—not necessarily from you.

The ECO Prepayment Automatic Air Station keeps away the something-for-nothing fiends, and affords better service for the patrons—new and old—who buy.

A New Idea That Appeals To Patrons—And Pays You

The better service—24 hours a day, without the necessity of an operator in attendance—more than pays users for the nickel-in-the-slot charge. A big success wherever introduced. As good an advertisement as a free system—and better than self-supporting—eliminates tipping and keeps customers in good humor.

Hose automatically winds on reel inside of casing. Releases air valve when drawn out, and stops the flow on rewind. Gauge at top shows pressure in supply tank. Electrically lighted at night. Attracts patronage and advertises owner. Also contains water connection for filling radiators free. Station suitable for sidewalk or interior installation. Built of best quality iron. Price, $75.00. Same apparatus for free air station, $70.00.

Eco Ceiling Automatic Air Station Eliminates Waste—Saves Money

Leads all Free Air Stations in economy and low up-keep. Supply of air is out of the way. Apparatus takes up no floor space. Hose automatically winds on reel. Prevents damage from cracking, rotting, etc., to which hose is subject when lying on garage floors. The ideal Free Air Station. Design similar to ECO Prepayment Automatic Air Station, except that it is assembled to operate from the ceiling.

If your Free Air Station is falling short of the mark you set for it in service or returns—or if your garage is not equipped for proper air service, **write today for full ECO details.**

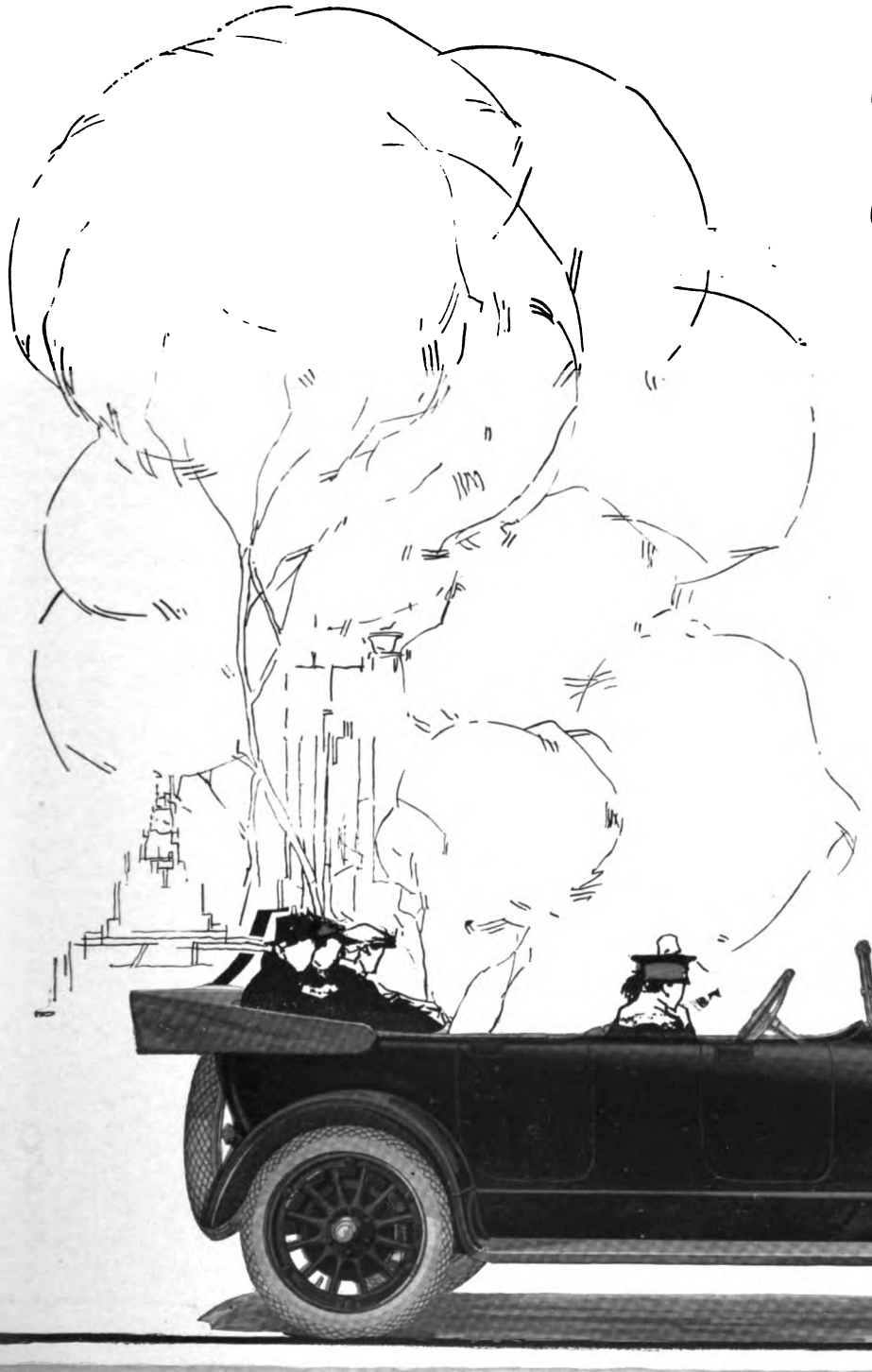
ELECTRIC APPLIANCE COMPANY

CHICAGO DALLAS
SAN FRANCISCO NEW ORLEANS

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The MONROE

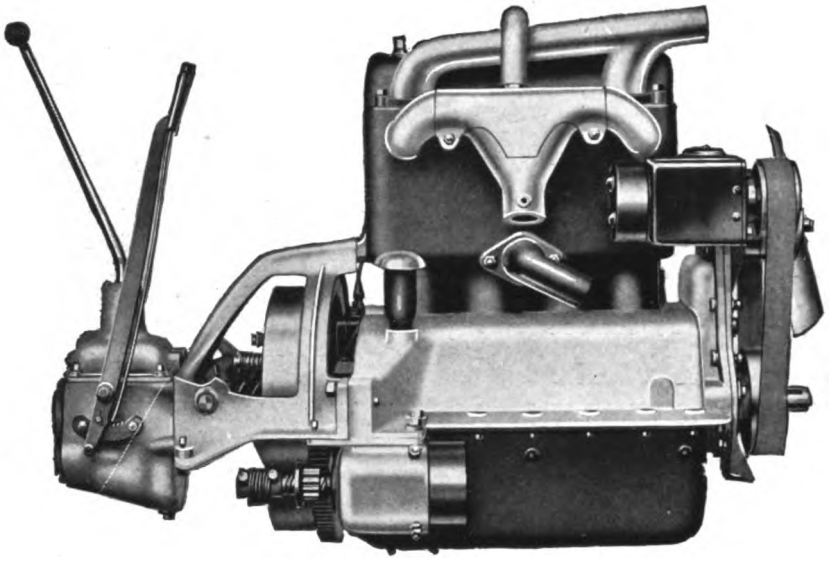
MONROE



The Car That Convinces

$985

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The Motor

A small, highly refined, highly developed 4-cylinder motor, valve-in-head type. The most efficient and convenient style motor ever built. With this motor the Monroe car will run at speeds from three miles per hour to sixty, quietly, without the slightest vibration and under perfect control.

The engine has removable cylinder heads, cast en bloc, a great convenience in handling, besides permitting extreme accuracy in grinding. The intake manifold is integral with this casting. The cylinders are also cast en bloc with the upper section of the crank case.

The crank shaft is larger than those used in the average motor of twice the size. The crank shaft bearings are 2 1-4 inches wide. The crank shaft is fully counterbalanced. The counterbalances are part of the original crank shaft forging. They are not welded or bolted on as is the case with every other counterbalanced crank shaft in use today.

The valves are large and easily adjusted. The cam shaft is hardened and ground. The Monroe car has a unit power plant.

The Equipment

The Monroe power plant is supplemented by standard high grade units recognized throughout the industry as the best, and found on all high priced cars. On the Monroe you will find a Zenith carburetor; Connecticut Ignition driven from the cam shaft, in combination with the belt driven Auto-Lite Generator; Auto-Lite Starting Motor with Bendix Drive operating on the fly-wheel; Fedders Radiator with thermo syphon cooling system and auxiliary tank; multiple disk type clutch using six dry plates of Raybestos and Steel; selective type sliding gear transmission, three speeds forward and reverse; nickel steel gears, double heat treated; Stewart-Warner vacuum feed. A Boyce Motometer gauges the condition of your engine. Ball Bearings are used throughout.

Pressure Oil Feed

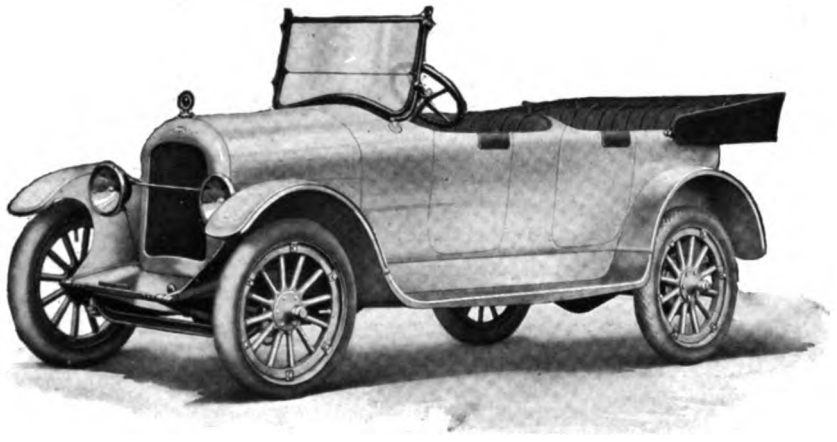
The special pressure oiling system of the Monroe solves the problem of over and under cylinder lubrication at high and low speeds in a very effective manner. The oil pressure is raised as the throttle opens, which causes the lubrication to increase as with power development and reducing it to a minimum when the engine is idling along with light loads.

The continuous circulation of oil through the crankshaft involved in the lubricating system of the Monroe carries off a considerable amount of heat, keeping the bearing temperature very near that of the oil in the oil pump. This also permits a thorough lubrication of the bearing with a minimum amount of oil as the heat which would otherwise be transmitted to the oil between the crankshaft bearings is carried off by the circulation.

Can you Think of a single
Not embodied in the-

MONROE

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The Frame

The Monroe car is built upon the Brush patented chassis structure. The frame follows the lines of the body, permitting light construction with maximum strength; and a body as light as carrying requirements permit, giving at the same time a rigidity and stability unequaled in any other construction. The doors retain their alignment indefinitely and the rattling and squeaking of body parts is prevented. The Monroe car has the deep frame construction and compound cantilever springs which do so much to secure maximum riding comfort.

The lightness of the construction in body, chassis and motor economizes power and permits the use of moderate sized tires and reduces tire wear. The rear axle housing is pressed steel with nickel steel reinforcing tubes, spiral bevel gears are used to secure quiet transmission. Rear wheels are keyed directly to the outboard ends of the live axle shafts further lightening construction while increasing its reliability.

The Locking Differential

In the rear axle the Monroe car has installed a M. & S. differential. This equal tractive differential is one of the most significant engineering developments of the day. The man driving the Monroe car, equipped with a differential that operates only when necessary, is saved most of the danger of skidding and spinning. The reduction of spinning also reduces tire wear. In the Monroe car he is assured of balanced traction in both wheels under all conditions, an important asset when he is stuck and only one wheel has traction.

The Body and Finish

The Monroe Car is as attractive in appearance as it is well built. It has neat, well balanced lines suggesting refinement and strength. The upholstery and finish are of the finest grade.

All the materials that have been put into the Monroe car from the Tungsten steel of the valves to the No. 1 leather trimmings are of the best and have been carefully selected for the particular function they have to perform. It is by high quality of material as well as extreme care in design that we are enabled to make the Monroe car so light in weight and yet achieve so great a measure of reliability, stability and lasting power. The Monroe car including every item which makes for service, convenience and comfort sells at $985

Engineering Trend MONROE CAR?

MONROE

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To Dealers –

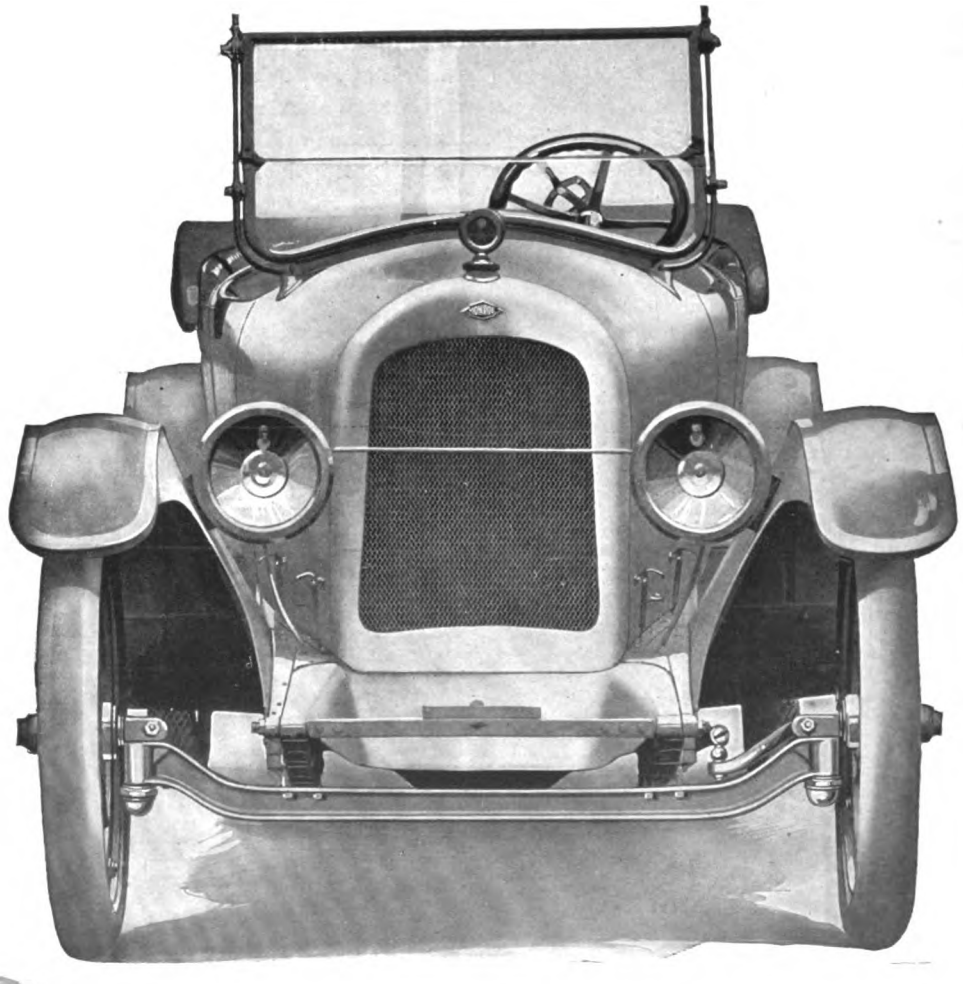
The Monroe Car is no ordinary proposition. The brief discussion of the features of the car in the inside pages of this advertisement is more than enough to show you that the dealer who sells the Monroe has a proposition that will sell on construction and dollar for dollar value.

Dealers who appreciate doing business on the basis of a straight proposition should get in touch with us, and let us have your references. If you are the type of man qualified to sell cars in accord with the Monroe principle we will send you our terms and discounts.

In your work with us you will have the Monroe organization behind you and a proposition that makes for staple business and satisfied customers.

MONROE MOTOR COMPANY
PONTIAC **MICHIGAN**

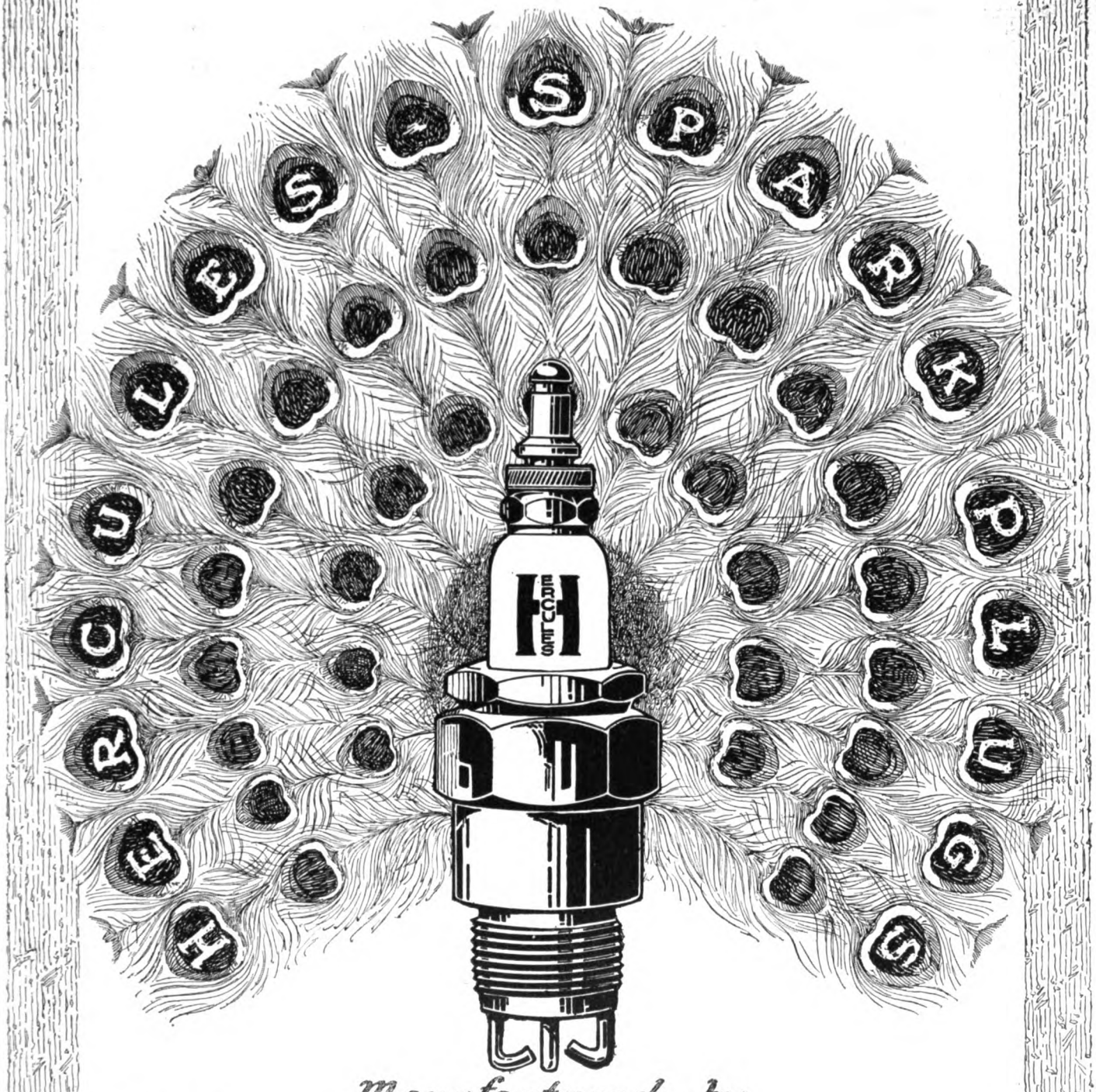
The MONROE



MONROE

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Guaranteed 5 Years

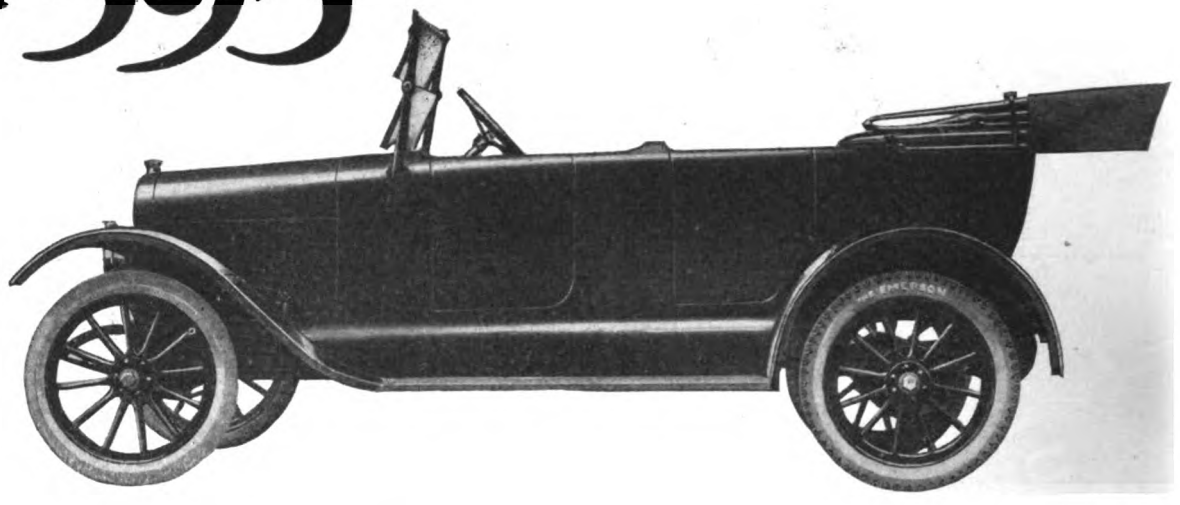


Manufactured by
Eclipse Manufacturing Co.
Indianapolis, U. S. A.

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The EMER

$395



AN ECONOMICAL CAR

That is at the same time Comfortable, Good Looking, and Soundly Constructed

THE EMERSON FOUR does not resemble a Roman Chariot. It is not bedecked with purple and gold. Neither is it a 90-horsepower "road-burner." It is not intended to rival the large, expensive automobiles.

IT IS A SENSIBLE CAR for the sensible man, who desires to stay within his means and at the same time enjoy the pleasures of motoring.

IT IS A SIMPLE, SAFE CAR, that your wife or daughter can drive easily and confidently.

IT IS A COMFORTABLE CAR, with plenty of leg room, with efficient springs and sufficient length of wheelbase. It enables you to "tour" without tiring yourself and passengers, or alighting with stiff, cramped limbs at the end of the journey.

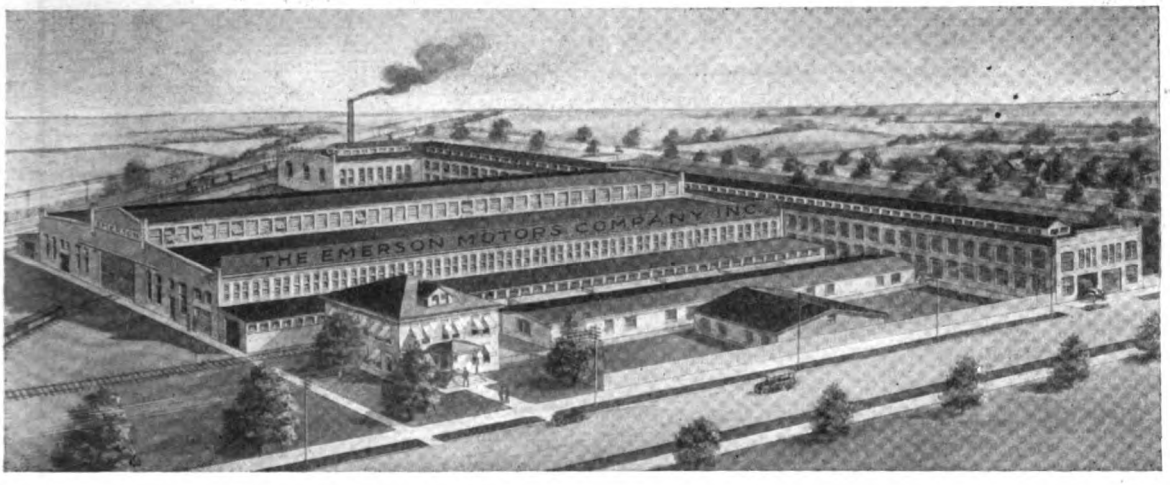
IT IS A GOOD-LOOKING CAR, low-hung, stream-line, handsomely finished and equipped.

IT POSSESSES THOSE DESIRABLE QUALITIES of graceful lines, exceptional roominess, ease of riding, and plenty of power with economy.

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RSON FOUR

The Lowest-Priced 5-Passenger 110-inch Wheelbase Car in the World



DEALERS

The Emerson Four is going to be one of the largest and fastest sellers of the coming year. It fills a gap just where the demand is heaviest. We are making dealer contracts now, and we want you if you are a live, dependable dealer. There is no car that you can take on with more complete confidence of good, permanent profits. If you are interested, we should like to hear from you as soon as possible.

THE EMERSON MOTORS COMPANY, Inc.

KINGSTON, N. Y.

EMERSON

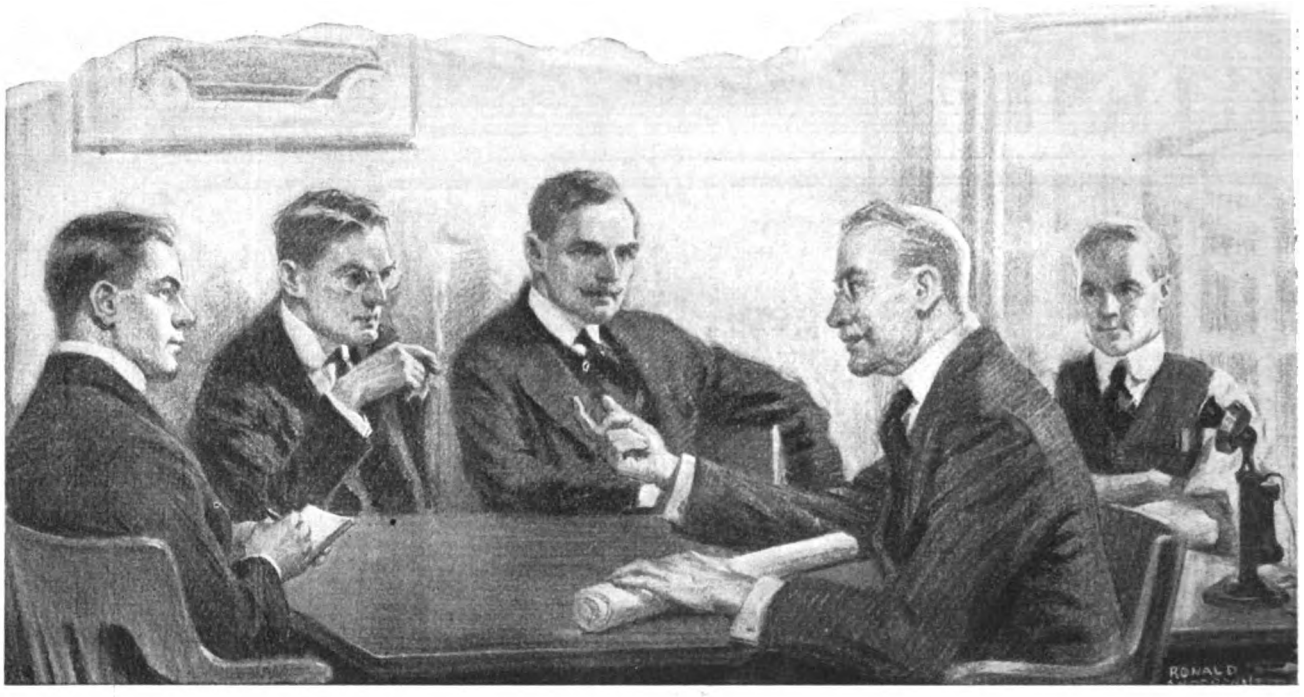
TRADE MARK

At the Chicago Show

The Emerson Four can be seen at the Coliseum, Basement Floor, Space No. 16.

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The Talk has Turned to Equipment



"Now, gentlemen," said the General Manager of a large motor car factory, "the success of our car has been built up by sincerely studying where improvements could be made in efficiency, durability and quality refinements."

"What about bearing equipment on our new models?"

"I am convinced that this matter of bearings is vitally important," replied the Sales Manager. "From the standpoint of the purchaser of the car, and as a selling proposition, ball-bearing equipment—a full jeweled job, giving every rotating part in the chassis the frictionless movement of a full-jeweled watch—has a decided selling advantage. I submit that we equip throughout with ball bearings."

"I second that recommendation," said the Advertising Manager. "For ball bearings throughout will be an added and convincing publicity feature in the sale of our car."

"What do you say, Mr. Engineer?" inquired the General Manager.

"It certainly follows the best engineering practice," replied the Engineer. "Ball bearings reduce frictional resistance and wear to the vanishing point, give longer life to every part of the machine, successfully resist shocks, thrusts, stresses, from any and all directions. In my opinion, ball bearings in our car mean chassis perfection."

And the Master Mechanic added: "Yes, and ball bearings are a complete, self-contained unit that never require adjustment, are absolutely trouble proof, and offer the advantage of comparatively inexpensive installation, assembly and upkeep."

This conversation is interesting to every dealer and car owner, for

NEW DEPARTURE BALL BEARINGS

mean not only mechanical perfection, but highest efficiency in service and lowest operating and upkeep cost.

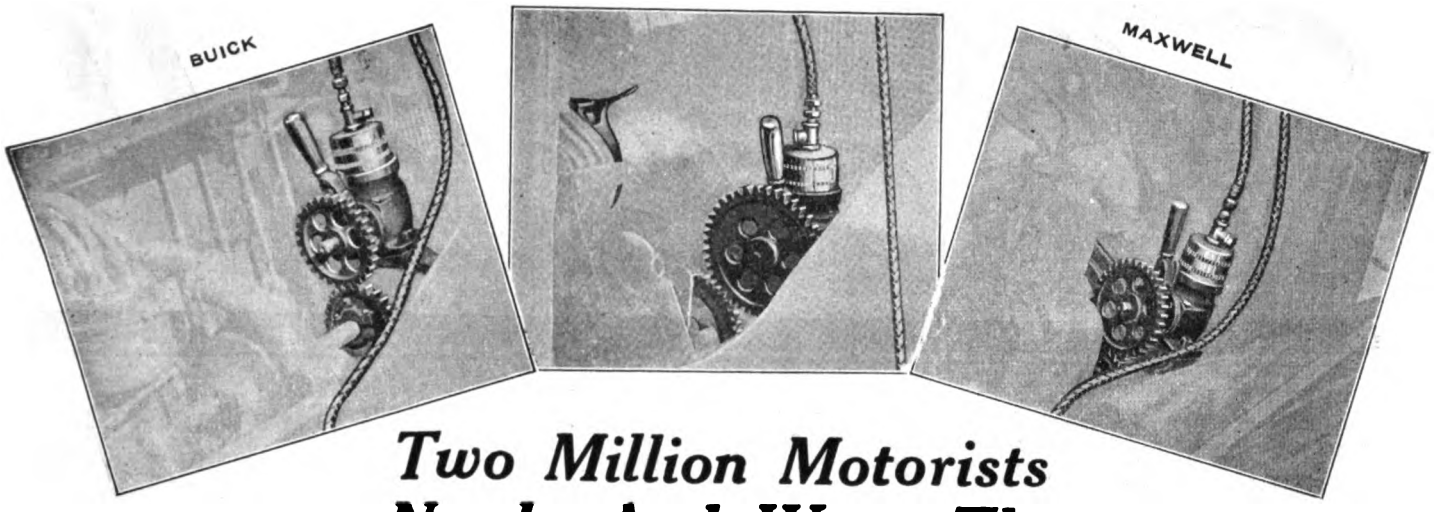
Send for the interesting booklet "New Departure Ball Bearings and What they mean to the Car Owner."

THE NEW DEPARTURE MANUFACTURING CO.

BRISTOL, CONN. **818-20 FORD BUILDING, DETROIT**

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OVERLAND



Two Million Motorists Need—And Want The

$8 Complete

Crane PATENTED

Engine Driven

TIRE PUMP

$8 Complete

Less than 1% of all the cars in use are equipped with *power* tire-pumps.

And the owners of the other 99% are waiting for a Pump like the CRANE.

For it's the ONLY engine-driven tire-pump that positively *can't pump oil.*

Due to its patented piston-ring construction—

It pumps pure air. Nothing but air. And MORE AIR than any pump of twice its size.

Because it's 97% efficient. Instead of the *usual* 65%.

It requires less room. It adds less weight. It consumes less power. Yet it puts 80 pounds in a 4" tire in 4 minutes' time.

And sells for $8 complete. Including Hose, Tire-Gauge and Special Fittings for nearly every make and model of car.

No holes to drill. Any motorist can attach the Crane. Or you can make an extra profit from this work.

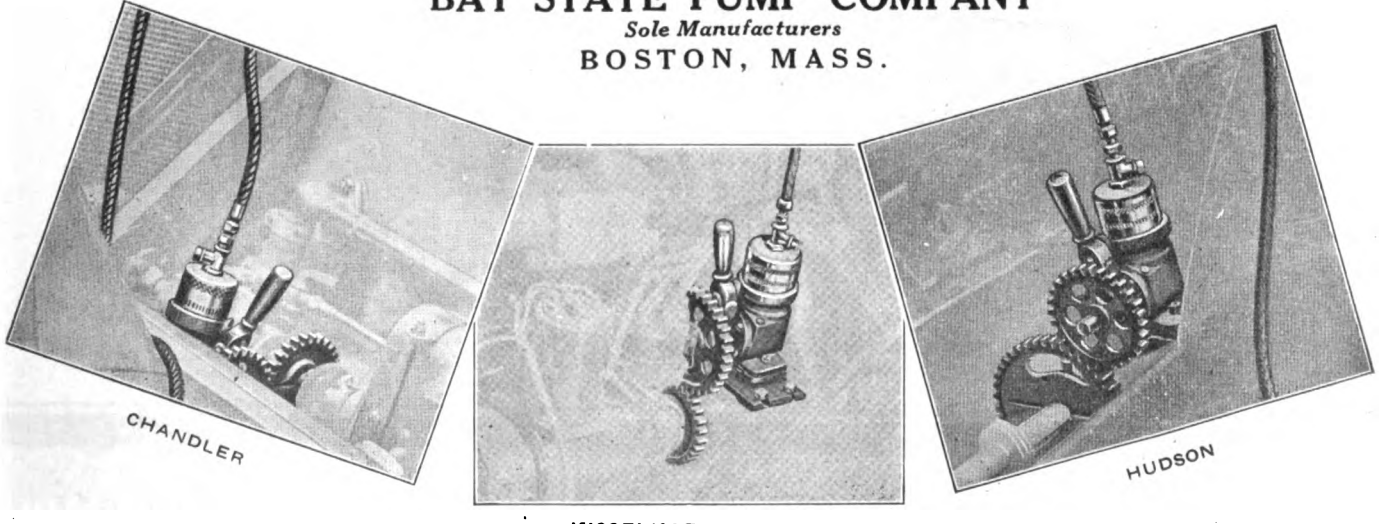
Write your Jobber today for CRANE discounts. If HE can't quote you—write US, and we'll tell you who can.

Chicago Show, Space 5

BAY STATE PUMP COMPANY

Sole Manufacturers

BOSTON, MASS.



KISSELKAR

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Maxwell

FOR two years our dealers have urged us to build a commercial car. They have told us of the insistent appeal for a light motor truck—a truck that, by right of greater value, would dominate its field.

To satisfy this demand—to build a truck that would favorably compare with our passenger car was no light task. So we started months ago to investigate; to design; test and experiment; to buy the raw materials and to arrange our factories for efficient, economical production.

Maxwell has always followed the policy of building first a product of exceeding merit that would give *Continuous Owner Satisfaction* and then building it in such great numbers that the price could be reduced.

The same policy governs the manufacture of the Maxwell One-Ton Truck.

Famous Maxwell Engine Used

We shall use the same redoubtable Maxwell Motor—the motor that drove the World's Endurance Champion Maxwell Car for 22,022 miles without once stopping—the motor that develops 33 4-5 H. P. by actual dynamometer test—the motor that has carried the Maxwell car to victory in hill climbs, in reliability contests, through mud, sand, and over the worst roads imaginable.

The same Maxwell motor that has done all this and much more, and giving, meanwhile, 20 or more miles per gallon of gasoline!

A Real Truck Versus a Makeshift

Remember, however, that the Maxwell One-Ton Truck is not a revamped or reconstructed pleasure car.

The Motor is the *only* point of similarity.

It is easy and cheap to disguise a touring car with a delivery body. But we are not building our reputation on imitations or entrusting our future welfare to expedients.

The Maxwell One-Ton Truck is a real truck—a commercial vehicle through and through.

Worm Drive

The Timken-David Brown Worm and Gear is used for final drive in the Maxwell One-Ton Truck.

The worm drive presents none of the objections and difficulties usually encountered with other forms of final drive. Worm drive is everywhere recognized as superior, especially for lighter weight trucks.

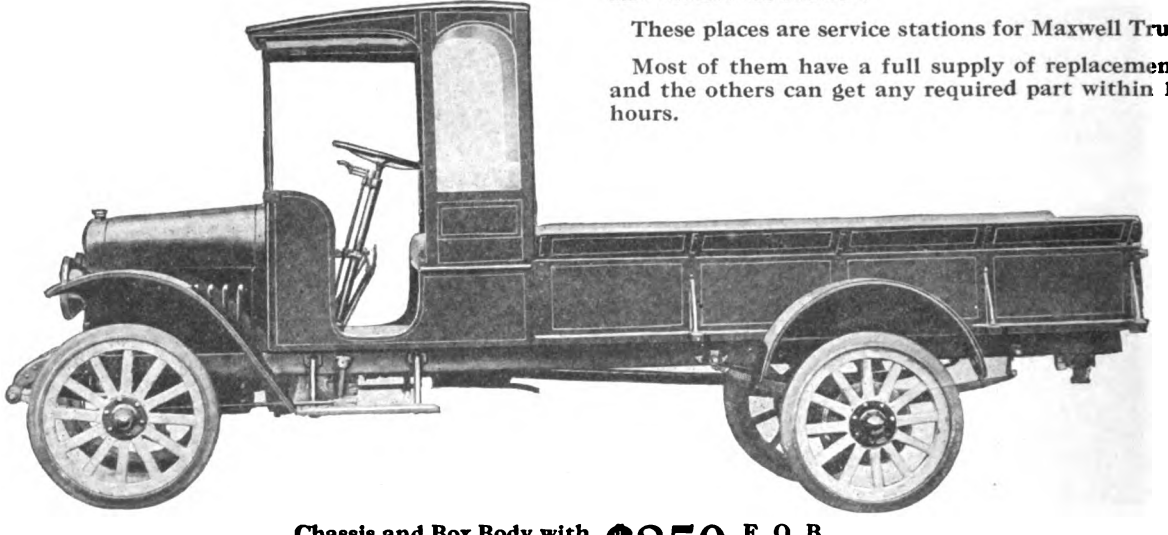
Other features of the Maxwell Truck, together with detailed specifications, are covered in our new truck catalog, just off the press. Copies will be promptly forwarded on request.

Maxwell Service

All over the country Maxwell branches, distributors and dealers are located.

These places are service stations for Maxwell Trucks.

Most of them have a full supply of replacement parts and the others can get any required part within 12 to 24 hours.



Chassis and Box Body with Cab and Windshield . **$850** F. O. B. FACTORY

Write for Truck Catalog and Full Information

When writing advertisers please mention Motor World

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One ton Truck

Such service is impossible for the exclusive truck builder. He cannot get and could not maintain such a nation-wide organization.

It is only our tremendous passenger car business that makes it possible in our case.

Quantity Production

Not only are we one of the world's largest producers of motor cars; we plan also to be the largest producer of trucks.

Through this immense volume of business we can attain a manufacturing efficiency heretofore unknown. We can furnish a better product for less money.

Commercial cars are usually built in small quantities—a few hundreds or two or three thousands per year—hence the price must remain high.

Until truck builders meet the competition of large production, they will have to charge high prices for their product.

CHASSIS

$795

F. O. B. FACTORY

The Maxwell alone offers a real truck at a quantity production price.

This price of $795 is truly remarkable.

Go over the whole list of commercial cars made in this country. Compare them point for point with the Maxwell.

Consider the illustrious record of the Maxwell Cars, and then bear in mind that the Maxwell Truck has behind it all the experience gained through years of motor car manufacturing—that the Maxwell Truck is the same dominant value in its field as the Maxwell Car is in its field—that the Maxwell Truck, like all other Maxwell products, is one that reflects the character, ideals and business integrity of the Maxwell Motor Co.

The Maxwell One-Ton Truck opens a field of unlimited possibilities to dealers in every city and town. The combination of Maxwell Cars and Maxwell Trucks is an unbeatable selling proposition.

Specifications

Standard Body Prices

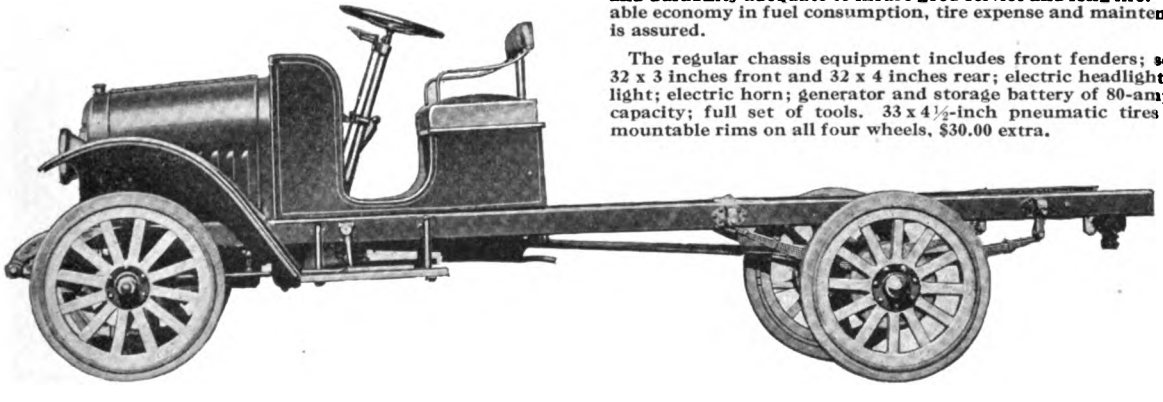
Box Body with Cab and Windshield	$ 55.00
Covered Express Body with integral cab and side curtains	95.00
Panel Body with integral cab	105.00

All prices F. O. B. Factory.

Brief Description

Four-cylinder engine, cast in block, powerful and economical; three-speed transmission; gears made of heat-treated alloy steel. Worm drive, using Timken-David Brown worm and gear embodied in rear axle. Axles of heavy construction with Timken roller bearings throughout. Frame of pressed steel with heavy cross members. Extra long springs made of special spring steel. Sturdy wood wheels with steel rims. Two sets of brakes acting on rear wheels. Heat-treated alloy steels used in all vital parts, providing a margin of strength and durability adequate to insure good service and long life. Remarkable economy in fuel consumption, tire expense and maintenance cost is assured.

The regular chassis equipment includes front fenders; solid tires, 32 x 3 inches front and 32 x 4 inches rear; electric headlights and tail light; electric horn; generator and storage battery of 80-ampere-hour capacity; full set of tools. 33 x 4½-inch pneumatic tires with demountable rims on all four wheels, $30.00 extra.



Price of Chassis with regular equipment as illustrated
$795 F. O. B. Factory

Maxwell Motor Company, Inc. Detroit, Mich.

When writing advertisers please mention Motor World

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PURE PENNSYLVANIA PETROLEUM PRODUCTS

Autocrat MOTOR OIL

Guaranteed to the limit. If the buyer is not entirely satisfied he gets his money back. This means YOU. Every buyer so far has been not only satisfied but enthusiastic. But we take YOUR word for the oil YOU buy, and if it is not the best you have ever used, you don't have to pay for it. This goes absolutely without question or quibble.

And following are the reasons why we can afford to guarantee it in this way.

AUTOCRAT Motor Oil is made from Premium Pennsylvania Crude—selected crude from a small selected district.

It is guaranteed to contain less than 16/100 of 1% of carbon; it stands the highest fire test of any pale oil made from Pennsylvania crude.

This low carbon content and high fire test combine to render AUTOCRAT not only the most efficient but the most economical lubricant, giving the maximum amount of lubrication for the least amount of oil.

AUTOCRAT is a thoroughly filtered oil, guaranteed not to have been treated with chemicals—no sulphuric acid or caustic soda used.

We are the exclusive manufacturers of AUTOCRAT, which we obtain by a special process. It cannot be duplicated nor equalled.

Made in five grades: Light, Medium, Heavy, Extra Heavy. The light and medium grades are universally used for motor cars; the heavy for commercial cars and trucks and air-cooled engines; the extra heavy for motorcycles, etc. Zero for winter use.

To obtain thorough satisfaction from AUTOCRAT, DO NOT MIX WITH OTHER OILS!

AUTOCRAT dealers command an exclusive trade.

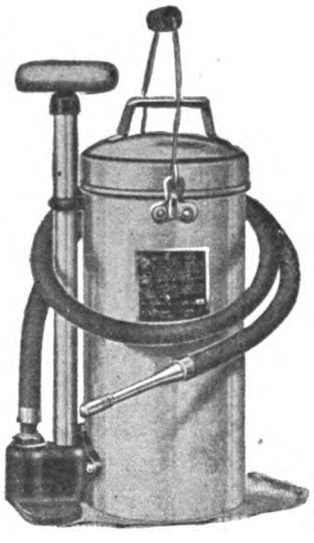
EBONITE
FOR TRANSMISSIONS

One filling lasts a Season!

EBONITE for Transmissions, Universals, Differentials, Timing Gears, etc., is specially refined from Pennsylvania's highest priced crude—known as the "Franklin Heavy Crude."

It forms an elastic spongy mass upon gear teeth, preventing metal to metal contact, and allowing gears to run noiselessly and efficiently for a longer time than any other known lubricant.

EBONITE will not separate under any conditions—even if heated to liquid, and when cool it is exactly the same as before.



It has an extra long fibre and is all pure petroleum. It will not drip or run; will not dry nor cake.

EBONITE has no equal and is guaranteed to be absolutely the best in the market for the purposes named.

Dealers can guarantee it without reservation, confident that we will back them to the limit.

EBONITE is put up in 5 lb., 10 lb., 25 lb., 50 lb. cans, half-barrel and barrel lots.

DEALERS: For a limited time, to get EBONITE into the hands of more satisfied users, we will give a self-measuring grease gun, as illustrated, value $7.00, FREE! WRITE TODAY FOR OUR COMPLETE DEALER PROPOSITION!

BAYERSON OIL WORKS

Manufacturers of Higher Grade Oils and Greases

ERIE, PENN.

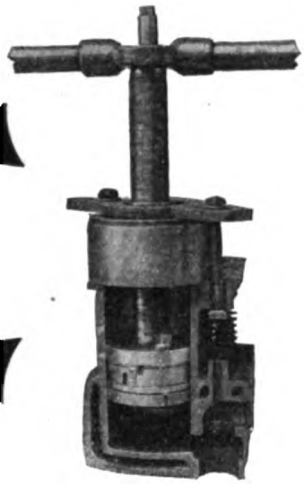
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STORM & O'HAIR

CYLINDER REBORING MACHINE

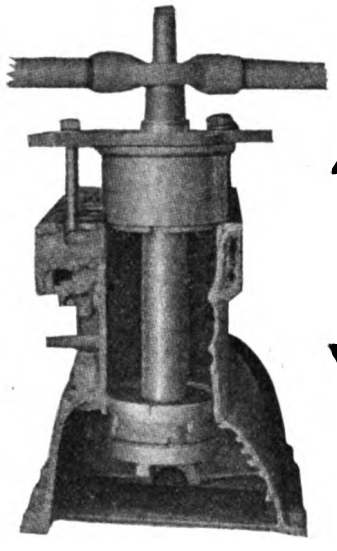
You want to be equipped to perform this important repair job. You do not want to send out to your competitors work that pays ten times shop rates. Keep it home for yourself, and keep your shop busy during dull seasons.

The Standard Improved Machine is adjustable and will rebore practically all makes of motors for automobiles, motorcycles, aeroplanes and tractors, as well as light marine and stationary gas engines. The *Standard* is a portable machine for operating by hand, or on low-speed drill press. It can be operated by anyone familiar with machine tools. Each cut leaves a smooth finished surface. Adjustable to .031".



Our Improved Machine for Fords, at lower first cost, is exactly the same as the Ford part of the *Standard.* It will rebore cylinders having a bore of 3¾" to any desirable oversize. Additional equipment can be purchased at any time to make it suitable for reboring other sizes.

These are thoroughly tested and reliable machines and have many satisfied users throughout the United States, Canada and Foreign Countries.



We are distributors for Over-sized Pistons for all makes of cars to fit rebored cylinders.

101 Standard Improved Machine (for 3¼" to 4½" diam. inclusive)	$65.00
102 Small head and attachments (for 2¾" to 3¾" diam. inclusive)	20.00
103 Large attachments (for 4½" to 5 1/16" diam. inclusive)	15.00
104 Improved Machine for Ford Cylinders only	45.00

Sold by Leading Jobbers Everywhere

We also manufacture the Storm Fuel Oil Filter, to keep dirt, grit, water and other impurities out of the carburetor.

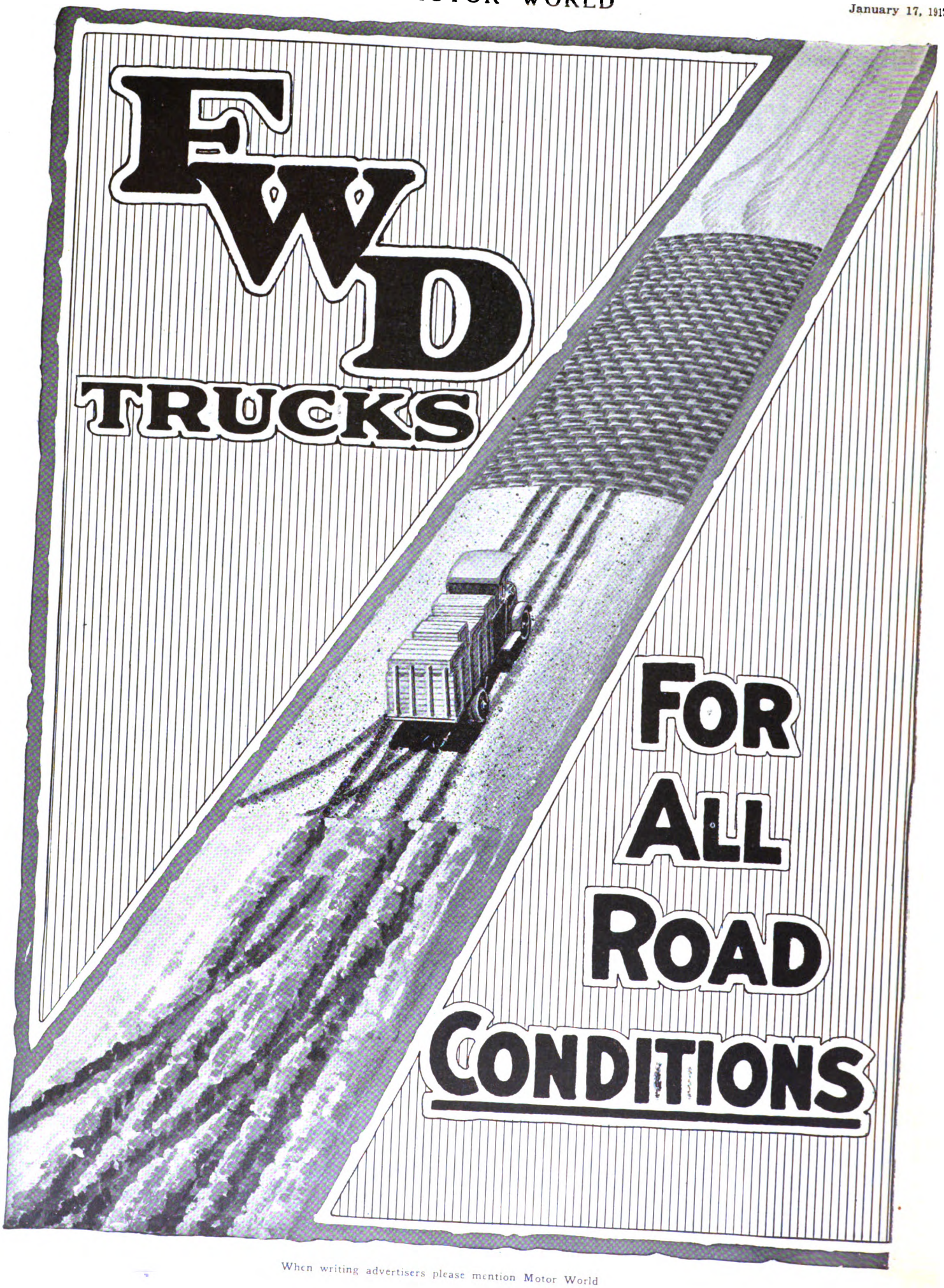
Price, $3.00

Write today for further information and prices

STORM & O'HAIR COMPANY

226-7 W St. **Thompson, Iowa**

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DEPENDABILITY is a word so full of meaning that it sums up all that is required in a truck. To tell how this word applies to F-W-D Trucks requires the 28 pages of the new catalog. This book explains clearly how the four wheel drive principle as applied to the

F W D TRUCK

Means

Dependability Under All Conditions

On Smooth City Streets the F-W-D Truck with equally distributed weight, power and strains, delivers a maximum of useful power with a minimum of wear and tear on mechanism, frame and tires. The power being in all four wheels and the brakes acting equally on all four wheels, skidding is practically eliminated.

On Block Pavement and Cobblestones the vibration is equalized, thus removing the tendency to rack and twist the frame, shafts, motor and transmission.

The body is designed so that 55 per cent of the load falls on the rear axle, instead of 75 to 90 per cent as in rear drive trucks.

Power in the front wheels helps to reduce the vibration as they lift themselves over the bumps, instead of being pushed over by the rear wheels.

In Sandy, Muddy or Rutty Roads F-W-D Trucks on account of having traction in all four wheels, are able to go through difficulties that would be impossible for rear drive trucks.

In short, the four wheel drive principle as applied in F-W-D Trucks makes for dependability in every condition, road, load or traffic. Every point is clearly demonstrable and every demonstration brings out the fact that the adoption of the F-W-D Truck will be a lasting, good investment—one that pays dividends in economy, durability and continuous service.

Dealers who desire to build up a truck business on the sound basis of continued satisfaction to their customers are acceptable in unoccupied territories. To such we will gladly send details of our dealers' arrangement with prices, discount and terms.

Write for the New Illustrated Catalog.

FOUR WHEEL DRIVE AUTO COMPANY

Dept. P. **Clintonville, Wisconsin**

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Become a Part of the Selden Organization

It has been said that this company is discriminating in its selection of dealers. That's true. We don't want every Tom, Dick and Harry to sell

SELDEN TRUCKS

SELDEN TRUCKS · SELDEN · IN-BUILT QUALITY ·

We want live, hustling, dependable dealers who can become a part of the Selden organization, just as they would become a partner in a business. For that is practically what a dealer does when he becomes our representative.

We do more to encourage that feeling among our dealers than any other truck manufacturer is doing today. For we want our representatives to know that we are working for their interests here at the factory just as we want them to work for our interests in the field.

Write for our Territorial Application Blank at once. Perhaps you are the man we are looking for. It may mean Truck Success for you in the future. Do it NOW!

Selden Truck Sales Co.

Rochester, N. Y., U. S. A.

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To Keep Posted as to the Ads Your Farmers Are Reading You Should Subscribe for, and Study

The Foremost Farm Papers

Key to above map		Frequency	Circulation	Price
No. 1	Successful Farming, Des Moines, Iowa	Monthly	800,000	$ .50
No. 2	Farm Stock & Home, Minneapolis, Minn.	Semi Monthly	140,000	.50
No. 3	Southern Ruralist, Atlanta, Georgia	Semi Monthly	261,000	.50
No. 4	Kimballs Dairy Farmer, Waterloo, Ia.	Semi Monthly	184,000	.50
No. 5	Gleaner & Business Farmer, Detroit, Mich.	Semi Monthly	114,000	.50
No. 6	Inland Farmer, Louisville, Ky.	Semi Monthly	135,000	.50
No. 7	Practical Farmer, Philadelphia, Pa.	Semi Monthly	80,000	.50
No. 8	Fruit Grower, St. Joseph, Mo.	Semi Monthly	125,000	1.00
No. 9	Western Farmer, Portland, Ore.	Semi Monthly	75,000	1.00
	Total		1,914,000	$5.50

(See below how you can get any or all of the above papers at half regular prices)

Read the ads of manufacturers who sell through **dealers**, and make them **your ads**, by carrying and featuring those very brands.

Read the ads of manufacturers and mail order houses who sell **direct** to the farmers. They are a splendid education in modern merchandising.

Foremost Farm Papers are **friendly** to retail merchants or you would not now be reading this ad in your own trade paper.

Our publishers will not permit mail order advertisers to say anything in their ads against retail merchants.

The splendid editorial matter in these papers will keep you posted as to the farmer's problems and permit you to get closer to him, because more helpful.

The ads will show you what farmers are buying—and they are buying, or the advertising would stop.

By carrying the goods in your line advertised in Foremost Farm Papers you make all these ads your ads.

You raise yourself in the estimation of the farmers, because they know that the goods must be good or their farm paper wouldn't advertise them.

The map shows which of the **Foremost Farm Papers** have the heaviest circulation in your territory. Those are the ones for you to study.

Make up a list of them and send a check for HALF the regular subscription price (25c for the 50c papers and 50c for the $1.00 papers) to any of the agents named below.

Or if you only want free sample copies use the coupon.

Foremost Farm Papers

(Address Representative nearest to you)

J. C. BILLINGSLEA
1119 Advertising Bldg.
Chicago

J. C. BILLINGSLEA
1408 Kresge Bldg.
Detroit, Mich.

A. H. BILLINGSLEA
1 Madison Ave.
New York

A. D. McKINNEY
3rd Nat'l Bank
St. Louis, Mo.

Mr. J. C. Billingslea
1119 Advertising Building, Chicago

Please send free sample copies of the following papers:

.....
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.....
.....

Firm's Name.....
Address .....
Kind of Store.....

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A new "best seller" with no "backfire"

Once sold—stays sold. Delivers magnificent goods that never disappoint your customer. From price to pick-up, from magneto to mileage, a car of able, intrinsic worth—the new

STANDARD

The Magneto Equipped "Eight"

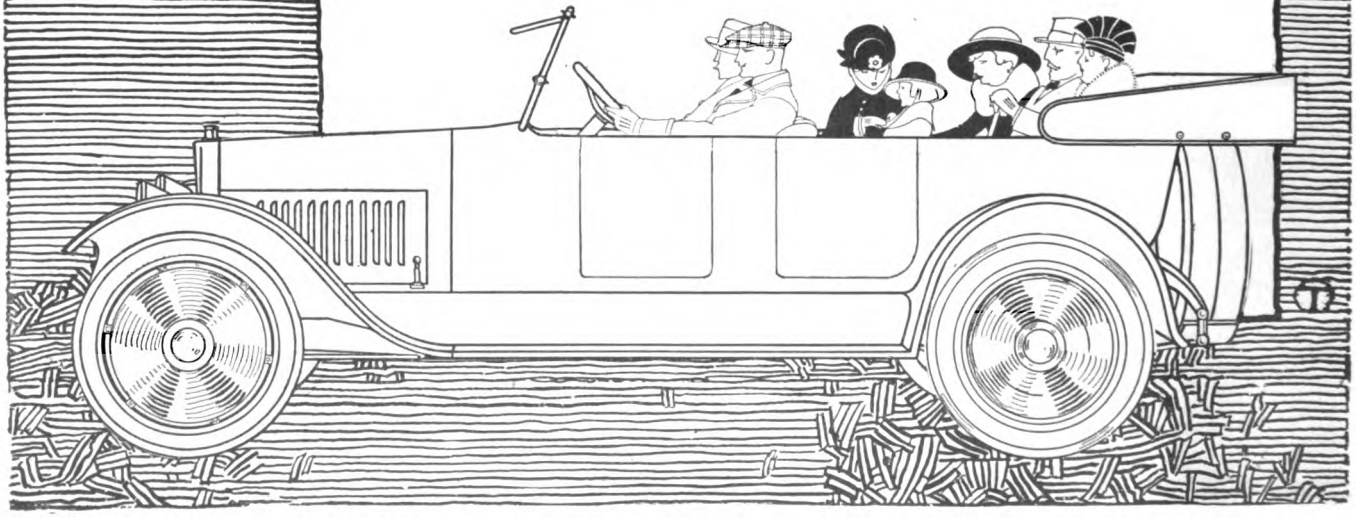
Profits and prestige for the dealer. This car out-demonstrates, out-performs, out-classes any "Eight" now in the field.

If you do not know the new Standard selling plan—if your present car gets a "backfire" from the buyer—send now for the Standard plan.

80 H. P.—127 inch wheel base—7-Passenger Touring, $2000. 4-Passenger Clover Leaf Roadster, $1950. F. O. B. Butler, Pa.

STANDARD STEEL CAR CO., Pittsburgh, Pa.

See Our Exhibits at the Automobile Shows



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OAKES

LICENSE BRACKET

Kranklock and Crank Holder for FORD CARS

A Necessity for Ford Owners

3 Big Values in One



Holds license bracket securely and rigidly. Supports the crank in upright position, and locks the car.

Every Ford owner must have a license holder. Here's one that costs no more than a plain holder, and it has two other practical uses.

The low price of this accessory makes it extremely reasonable, even if you put it to only one of its three uses. As a crank support it is invaluable. No chance for theft, as the crank, when locked, cannot possibly be moved. Pick-proof tumbler lock which we furnish is made specially for our Kranklock.

A wrench is all you need to quickly install. Price complete with lock, $1.00. Without lock, 50c.

Price $1 At all Dealers — Without Lock 50c

Jobbers and Dealers

Don't forget that every Ford owner MUST provide himself with a license holder. Every Ford owner wants a crank holder to keep crank from picking up mud and dirt when on bad roads, and every Ford owner wants a lock to protect his car against theft. The Oakes Kranklock and license holder, being made of pressed steel, is the best article of its kind on the market today. Dealers and jobbers everywhere are having tremendous sales on it. Three jobbers in a Central States city last season sold over 750 dozen. Jobbers and Dealers in small cities are selling proportionate amounts.

Right now's the time for you to "stock" Oakes Kranklocks. This year every Ford owner will see Oakes advertising—which will mean enormous sales for every dealer having them on sale. Drop us a line—we'll send you descriptive matter immediately.

See the Oakes Chicago Show Display

You are cordially invited to visit our display at the Chicago Show, Coliseum Annex, space 108. Make yourself known—we want to meet you—personally. Let us tell you more about our line.

THE OAKES COMPANY

Roosevelt & Wheeler Sts. Indianapolis, Ind.

Chicago Office, T. H. Dodd, Mgr.,
339 Railway Exchange Bldg.

Oakes Fans are Standard Equipment on over 200 makes of Automobiles and Tractors.

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3 out of 4 spring breaks are at the center

TUTHILL
Lubricated
TITANIC SPRINGS

are

guaranteed forever against center breakage

No Increase In Prices

TUTHILL SPRING CO.
760 Polk Street, Chicago, Ill.

Big Money in Springs if You Take This Tip
—Says No-Worry-Springs

When a spring breaks, the car owner comes to you in no happy state of mind. For goodness sake don't sell him another spring that will do the very same thing.

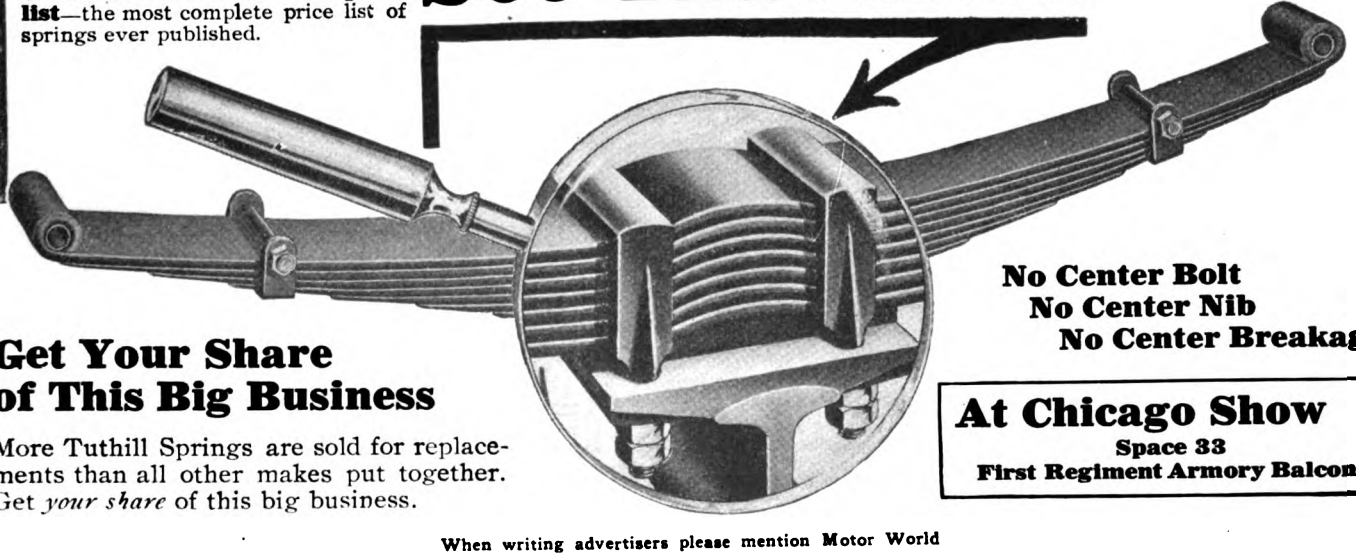
Sell him a Tuthill Titanic Spring and you do yourself a big favor as well as the buyer. Because Tuthill Titanic Springs don't break. They have no weakening center hole or center nib. They're guaranteed never to break at the center, where three out of four breakages come.

Spring breakages end when Tuthill Springs go on. Sell Tuthill Titanics and every buyer will boost for you.

You get better delivery service on Tuthill Titanics than on any other. Your distributor is always ready to make immediate shipments on stock orders, and we fill his orders the same day received. Even special orders go out within a couple of days or so.

Write for our new 1917 price list—the most complete price list of springs ever published.

See That Arch



No Center Bolt
No Center Nib
No Center Breakage

Get Your Share of This Big Business

More Tuthill Springs are sold for replacements than all other makes put together. Get *your share* of this big business.

At Chicago Show
Space 33
First Regiment Armory Balcony

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AS CONSTANT AS NIAGARA



The Recognized STANDARD

for

MOTOR CARS
MOTOR TRUCKS
AND TRACTORS

Upon request, we will send our Engineering Experts to help solve your problems.

LONG MFG. CO., Detroit, Mich.

Pioneer Makers of Gasoline Engine Cooling Systems

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Rim O' the World
PERLMAN

All the World Knows & Uses

Perlman Demountable RIMS

PERLMAN RIM CORPORATION
MANUFACTURERS
1790 BROADWAY — NEW YORK CITY
United States Rubber Co. Bldg. Broadway at 58th St.

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Wilmo Manifold

Completely Vaporizes Gasoline



Delivers Many More Miles to the Gallon— GUARANTEED!

The Wilmo Manifold Does All This:

It heats and completely vaporizes gasoline so that gasoline and air in correct proportions enter cylinders as a light, superheated mixture with combustion quality developed to the highest degree.

It increases gasoline mileage 42% to 54% by actual official A. A. A. tests.

It insures the complete utilization of every particle of gasoline in the form of clean, full-power gas.

Provides a warm mixture at the first few turns of the motor. Gets the car away immediately with all cylinders hitting. No stalling, no bucking, no back-firing through carburetor.

Insures a smoother running motor at all speeds. Makes a four as flexible as a six. Makes an old motor and carburetor work effectively without having to overfeed gas.

Insures virtually same increased efficiency from lower grades of gasoline as from costlier grades.

Enables motor to run on a 50-50 mixture of kerosene and gasoline without smoke, vapor, odor or engine trouble.

Abolishes virtually all valve and carbon troubles. Tests show practically no hard flint carbon deposits on pistons or around valves, even after a year's use.

Through complete vaporization and utilization of every particle of gasoline, no minute globules of liquid gasoline are left to trickle down into the lubricating oils to destroy their effect.

Saves the cost of having engine frequently cleaned and freed from carbon. Keeps down cost of new parts due to carburetion troubles. Increases car's utility where carburetion efficiency is concerned.

Keeps the car in commission throughout the winter.

A big winter seller.

Made in various sizes. Retails from $7.50 (Ford size) to $15, according to make of car.

Attached in thirty minutes with a monkey-wrench. No holes to bore.

Extensively advertised in the leading national publications.

Write for results of conclusive official tests, prices, and for selling proposition.

The Whittier Company
First National Bank Bldg., Chicago, Ill.

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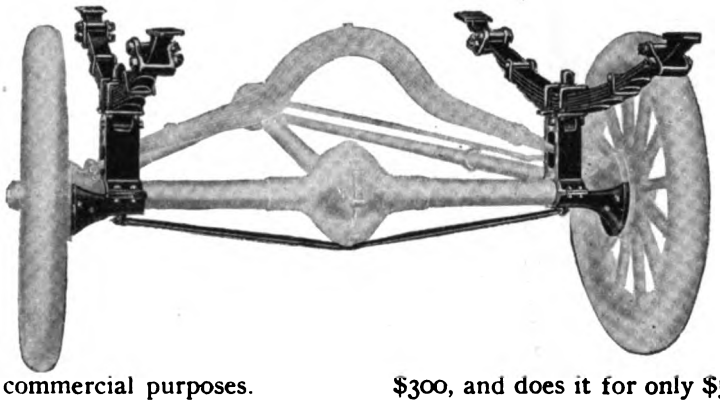
Dealers—Here Is A New Outlet For Your Used Ford Cars

Strip down the old Ford cars you have taken in trade. Add STABLEFORD Equipment and a commercial body. Put on a neat finish in your paint shop, and furnish waiting customers with more serviceable, better trucks than they can buy elsewhere for twice the price.

That's where dealers win with STABLEFORD Truck Equipment. Sell the old Fords at liberal profits in place of the customary loss. Make new customers who come back for service that pays. Open the truck field to paying new owners. Start a STABLEFORD Truck business that brings good profits from the first.

Consists of two 44-in. semi-elliptic springs, cast steel rear axle housing supports and truss bar. Can be attached to any Ford chassis in 2 hours' time, without in any way changing the original Ford construction. Can be removed at any time, leaving the Ford chassis in its exact original state, and can be attached again and again to other Ford cars.

Six Big Stableford Selling Reasons



Greatly strengthens the Ford rear axle.

Acts as a stabilizer, preventing the side sagging and swaying, inevitable with the Ford single camel rear body suspension, which was never designed for commercial purposes.

Permits use of longer body, thus adding to the loading space and carrying capacity.

Greatly reduces repair bills in differential, rear axle, tires, fenders, housing and spring.

Does all the work of other commercial units for Fords, selling from $200 to $300, and does it for only $50.

Makes the cheapest and best light truck ever produced at any price.

Stableford Truck Equipment

Attaches To Ford Chassis Without Removing A Single Bolt

Go into the STABLEFORD Truck business. Its possibilities for 1917 are tremendous. Use bodies you build yourself—or we can furnish full line of high-grade commercial bodies at extremely low price. Put profits where you have always had loss. Make the old traded-in Fords—and new chassis as well—into STABLEFORD Trucks that pay.

Write, wire, or use the coupon today for catalog and full STABLEFORD information.

Price Complete only

$50

Stableford Truck Manufacturing Co.

Room 602, 29 S. La Salle St. CHICAGO

Fine for Jitney Service. A paying business in itself.

STABLEFORD TRUCK MFG. CO.

29 S. La Salle St., Chicago.

Send me catalog, illustrated literature and exclusive agency proposition at once.

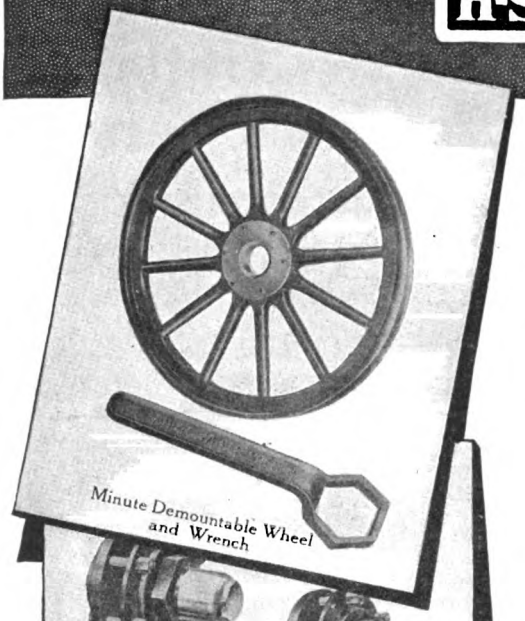
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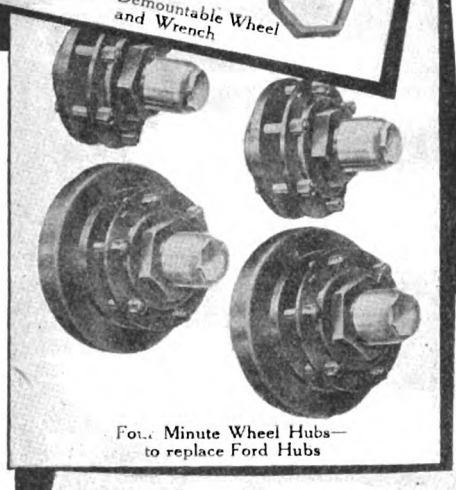
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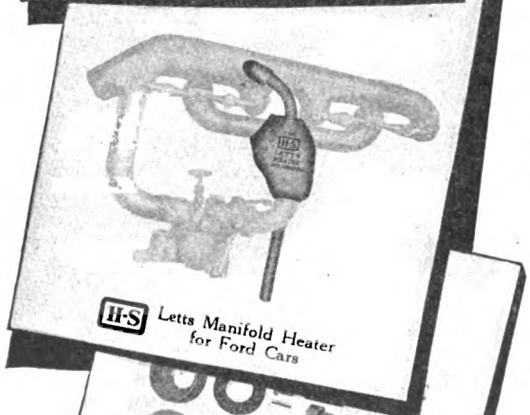
(Pin this coupon to your business letterhead.)

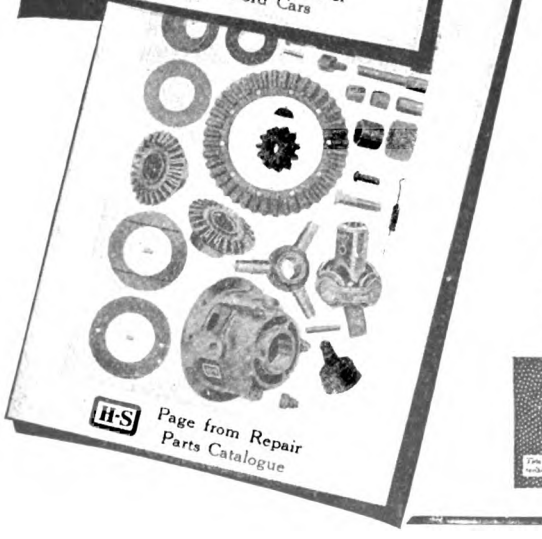
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H-S Repair Parts
for Ford and Overland Cars


Minute Demountable Wheel and Wrench


Four Minute Wheel Hubs—to replace Ford Hubs


H-S Letts Manifold Heater for Ford Cars


H-S Page from Repair Parts Catalogue

The Minute Demountable Wheel
For Ford Cars

It's a certainty that every Ford owner will be interested in seeing a demonstration of the wheel that enables tires to be changed on the darkest, stormiest, coldest night, as well as in sunshine **in race track speed.**

It's equally certain that once he has seen this demonstration, how you change tires in sixty-seconds, *with your eyes shut,* he will want his Ford equipped with the Demountable Wheel in preference to any form of demountable rims.

You can Demonstrate these Facts

Mr. Dealer, just as soon as your allotment arrives. Get after your jobber for it—Then we help you with advertisements in the big national magazines.

This is the equipment: One wheel to carry extra tire already inflated—(tire not supplied) one extra flange, one wrench, four Minute hubs front and rear, to replace Ford hubs.

Price Complete $30.00

H-S Letts Manifold Heater

For Ford Cars—is guaranteed to give from 20 to 40% more mileage in gasoline, to reduce carbon 50%, lessen spark plug troubles, to make a cool, even, smoother running engine. The heater is a two unit chamber enclosing intake, heated by tube from exhaust, easily taken apart to clean which is an essential feature for the success of any manifold heater. *Summer driving-comfort in Winter, a cool, even pulling quiet engine in Summer. No more "boiling" radiators.* **Style B for the Chevrolet also ready.**

Price $6.00

H-S Repair Parts now typify in the Ford owner's mind highest quality in material and workmanship and perfect fitting parts. Sold through the Jobber.

Dealers—All the above are sold only through [H-S] Jobbers. Get in touch with the nearest [H-S] jobber for your allotment. Booklets on the Minute Wheel and the Letts Heater will interest you as will our price list of [H-S] Repair Parts. Send for all three.

HIGHEST QUALITY H-S PROMPT SERVICE

HILL-SMITH METAL GOODS COMPANY
MANUFACTURERS OF MOTOR PARTS AND ACCESSORIES
REPAIR PARTS FOR THE FORD AND OVERLAND CARS
BOSTON, MASS.

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Announcement

A one-ton truck unit—remarkably low price—quantity production—backed by a big factory and years of successful manufacturing experience. The only attachment *including cab and body for $350.00*—an extra value and saving of $75.00 to $125.00.

The specifications insure quality and performance. They include Hess special heat-treated springs, solid forged axles, Bock roller bearings, Prudden wheels, hubs and rims, Kelly-Springfield tires, Cab and Body of the highest grade, thoroughly ironed and braced and receives seven coats of paint and varnish.

Graham Brothers One Ton Ford Truck Unit

Cab and Body included only → $350

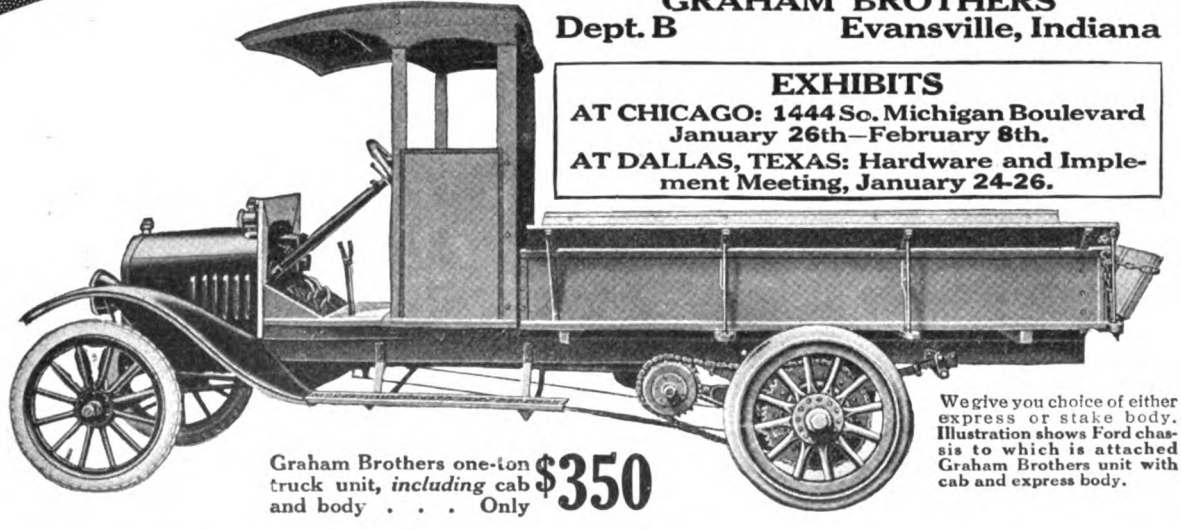
The tread on the rear wheels is standard—56 inches. There is no cutting off of the rear housing or change made in the Ford rear system. It is easily and quickly attached. No special tools are needed.

Some territory still open for dealers. Write or wire.

Fully Guaranteed for ONE YEAR

GRAHAM BROTHERS
Dept. B Evansville, Indiana

EXHIBITS
AT CHICAGO: 1444 So. Michigan Boulevard January 26th—February 8th.
AT DALLAS, TEXAS: Hardware and Implement Meeting, January 24-26.



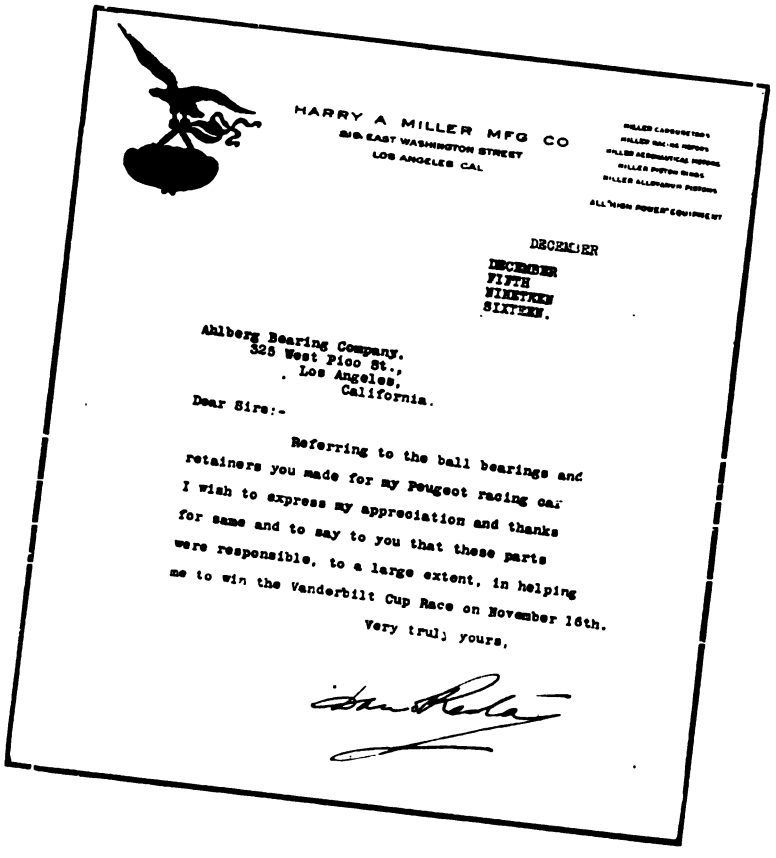
Graham Brothers one-ton truck unit, *including* cab and body . . . Only **$350**

We give you choice of either express or stake body. Illustration shows Ford chassis to which is attached Graham Brothers unit with cab and express body.

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Resta



HARRY A MILLER MFG CO
[illegible] EAST WASHINGTON STREET
LOS ANGELES CAL

DECEMBER
DECEMBER
FIFTH
NINETEEN
SIXTEEN.

Ahlberg Bearing Company.
325 West Pico St.,
Los Angeles,
California.

Dear Sirs:-

Referring to the ball bearings and retainers you made for my Peugeot racing car I wish to express my appreciation and thanks for same and to say to you that these parts were responsible, to a large extent, in helping me to win the Vanderbilt Cup Race on November 18th.

Very truly yours,

Ahlberg Reground Bearings are Good Bearings

For Ahlberg-invented machines do the regrinding. Ahlberg-invented instruments of precision insure accuracy. Ahlberg-invented retainers only are used. They reduce friction to a minimum. They never break. The steel in the rings is perfect. It has been time and wear tested in actual use. No flaws exist. All balls are new and are twice measured for size and uniformity. Each ball for its particular set, each set for its own bearing. All our reground bearings are seven times inspected by experts.

Thus do we assure you of the utmost in bearing efficiency, and through our nation wide organization of branches give you unequalled, prompt and efficient service.

You can prove all this at a profit for Ahlberg Reground Bearings giving equal service as new bearings cost only a fraction as much.

Send for interesting free book on Reground Bearing. Simply say send me *Ahlbearfax*.

For Quickest Service Write or See our Nearest Branch

ST. LOUIS, 2831 Locust St.
MINNEAPOLIS, 926 Marquette Ave.
CLEVELAND, 1836 Euclid Ave.
ATLANTA, 323 Peachtree St.
PORTLAND, 325 Davis St.



The Sign of Service

LOS ANGELES, 325 W. Pico St.
SAN FRANCISCO, 715 Turk St.
DETROIT, 790 Woodward Ave.
NEW YORK, 1790 Broadway
BOSTON, 93 Massachusetts Ave.

Ahlberg Bearing Company

2636 Michigan Ave. :: Chicago, Illinois

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REX

Rules Them All

That is not an idle catch phrase or a boastful slogan.

Rex plugs are supreme in quality — our thousands of dealers and the hundreds of thousands of owners who are growing in appreciation of Rex Plugs prove it.

Our dealers find in our line and in our exceptional proposition the right answer to profitable business on spark plugs.

High quality is produced by the finest raw materials, put together so precisely that the plugs hold compression without leak and stand up under the hardest service that modern motors can give. The porcelain insulators are compounded to our own formula and contain a factor of mechanical and dielectric safety that makes the Rex plug supreme.



THE PLUG OF QUALITY REX SPARK PLUG

The profit to the dealer is splendid—the profit to the car owner **greater** and more lasting.

Do not let this buying season go by without adding Rex Plugs to your stock. A sample order makes a dealer a friend and a customer for his business lifetime.

We want you to get started **now**—and cash in for 1917.

IGNITION CABLE

Our proposition on Ignition Cable swept the boards during 1916. Are you still outside the breastworks? A word on a postal brings the story. Why not write before you turn this page?

See us during Chicago Show at our Chicago branch, 1305 Monadnock Block

REX IGNITION M'F'G. CO.

58th Street, Broadway and 8th Ave., New York City

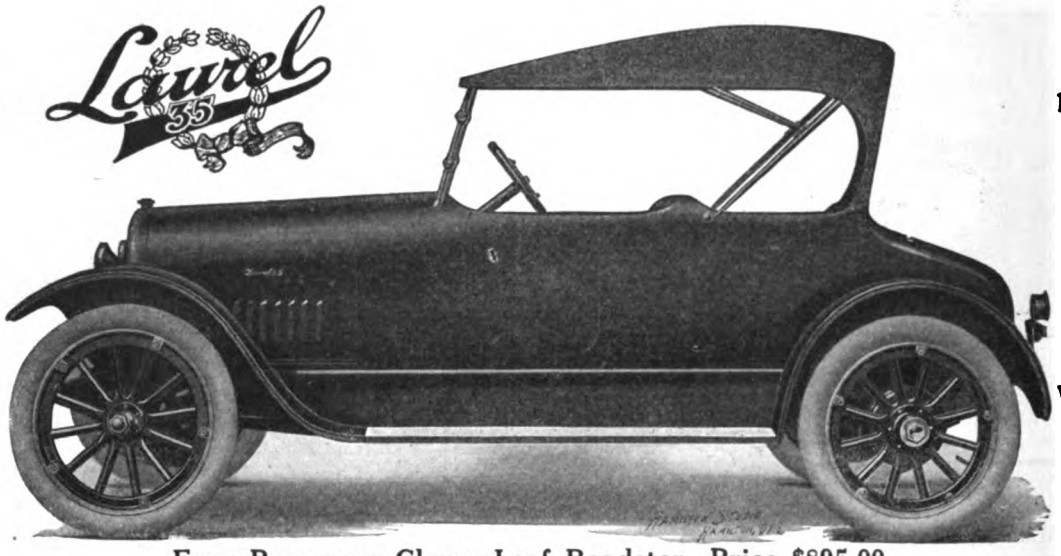
BRANCHES: PHILADELPHIA CHICAGO SAN FRANCISCO

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4 Cylinders

115" Wheel Base



36 Horse Power

Weight 2150 Lbs.

Four Passenger Clover-Leaf Roadster Price $895.00

Laurel 35 Four Passenger Roadster—$895

One look at the Laurel 35 Clover-leaf Roadster will grip anyone's attention and we doubt if you will find a more beautiful car. Its beauty is so striking that its selling value is apparent at a glance and an examination of its construction and equipment is an assurance of reliability, comfort and convenience which are astonishing when the price is considered. Front seats are full size with ample aisle space. Generous room is provided between front and rear seats, the latter being comfortably arranged for two passengers. Upholstering shows the latest ideas in harmonious color combinations and a buyer's astonishment is supreme at so much general excellence incorporated in a car at a popular price. It will appeal to everyone and particularly to young people who want the classiest car on the road and also the man with the small famil. It combines every feature of value which has made the Four Passenger Clover-leaf Roadster such a popular car, and the price considering the value offered is irresistible.

Read the following general Laurel specifications and compare them with any cars in America under $1,000 and note the Laurel superiority in construction over other popular-priced cars.

SPECIFICATIONS:

Motor: High speed type, four cylinders, 3¾" bore and 4¼" stroke, actual brake test 36 H. P. Three main bearings.

Transmission: Unit power plant type, center control; three speeds forward and one reverse. Gears and shafts nickel steel.

Clutch: Three plate type, completely enclosed, running in oil, raybestos lining between plates. Will not slip, grab or jerk. A more efficient clutch cannot be had.

Drive Shaft: Hotchkiss system with two universal joints, torque taken by tubular truss spring suspended on center cross member.

Front Axle: I. Beam drop forged. All parts of special steel.

Rear Axle: Full floating, axle shafts nickel steel, splined at differential ends and also at outer ends to receive drop forged drivers which attach to outer ends of hubs with six heavy jaws.

Differential: Brown-Lipe-Chapin Co.'s four pinion differential. Pinion gear and shaft-chrome nickel steel.

Bearings: Salisbury roller bearings on hubs of differential. Two Bower bearings in each rear wheel, hub carried on outer ends of axle tubes. Single and double row bearing on bevel pinion shaft.

Unit Power Plant: Motor, clutch and transmission form a unit power plant. Transmission may be removed without disturbing the installation of the motor.

Cooling: Thermo-syphon, cellular type radiator of large water capacity.

Springs: Front semi-elliptic, rear full cantilever, main leaves chrome Vanadium steel.

Steering Gear: Irreversible worm and full gear.

Regular Equipment: Shebler carbureter; Disco electric lighting and starting system; Dixie high tension magneto or Connecticut Automatic Distributor system for ignition; Quick detachable demountable rims; 32 and 3½" tires.

Laurel 35 Touring Car—Price $850

Beautiful streamline type with ample leg room in front compartment as well as in tonneau. Rear seat is 48" wide —full three passenger capacity. A family car complete in every detail. Upholstering of good material, cushion deep and resilient. The wide Crown fenders and running boards are standard features on all Laurel cars.

DEALERS

The dealer who does not have a high powered light weight car to sell for 1917 will have but a small volume of business. It will be the banner year for big sales and witness the passing of the "big car." High power and light weight mean hill climbing ability and low upkeep expense. Thirty-six H. P. and only 2150 lbs. weight through the high class steel used, guarantees the hill climbing ability of the Laurel and is an assurance of a "no trouble" car. Low tire cost with long mileage and from 20 to 30 miles to the gallon of gasoline and a freedom from repair and replacement expense make the Laurel 35 the ideal car for owner or agent. Regardless of what car you now offer you need the Laurel 35. It will bring you exceptional profits. If there is no agent for Laurels in your territory write us for our 1917 literature. We have a splendid proposition to lay before you—one which will surely interest you.

Address: Laurel Motor Car Company, Richmond, Indiana

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The Name "WEAVER"

has for years been a guiding star to the garage industry of this and other countries.

The genius, progressiveness and principles which that name represents have given the world the most complete and practical line of garage equipment ever produced.

ON EXHIBIT AT SPACE 8-c
Coliseum Basement
CHICAGO SHOW

Weaver Manufacturing Co.
2165-79 S. 9th Street
Springfield, Illinois

When writing advertisers please mention Motor World

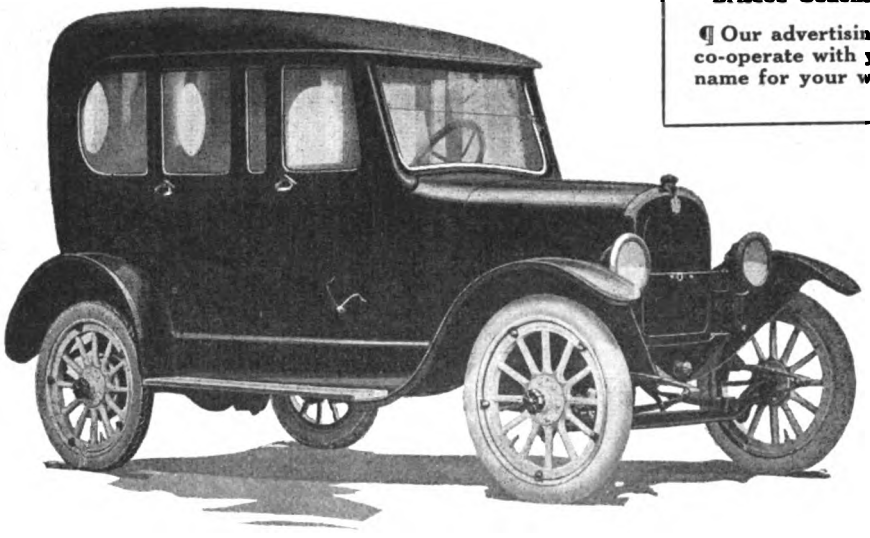
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Lay Your Plans Now— For Next Season's Closed Car Business!

¶ This shows one of our winter tops fitted to the Briscoe 4-24 model advertised as the "Briscoe Coachaire."

¶ Our advertising department will be glad to co-operate with you in working out a suitable name for your winter model.



Let's Talk It Over—

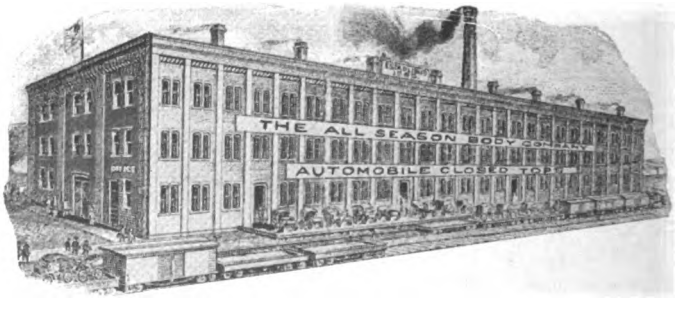
Each year more motorists are driving their cars the year 'round. Every season more and more closed cars and cars that may be fitted with a winter top are in greatest demand. Don't wait until the winter season is at hand and then try to hurry a top to fit your touring model, or to have designed an enclosed body.

Now, while there is ample opportunity to plan and design and fit is the time to get started on your winter body problems. Be ready to "cash in" on closed car sales by having your cars ready for early display.

Our bodies and tops are protected by patents and made by expert workmen—men who were born in the carriage and automobile body business.

In appearance, construction and materials they are the equal of the finest closed or Sedan bodies on sale today.

We are contracting now for only such work that we are confident we can make deliveries on, therefore, an early interview is solicited—when may we call?



ALL-SEASON BODY COMPANY

MARSHALL, MICHIGAN JACKSON, MICHIGAN

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100% Success In the Tire Business



Every man in business hopes to develop 100% of his possible sales.

For 100% is real success.

Now, how can you reach this point—say, in the tire retailing business?

Part of the 100% is made up by your personality, by your location, equipment, staff of employes and your activity.

But the rest of the 100% *depends on the kind of tires you sell.*

It's hard to determine just how this is divided, but we'll call it 50-50. Fifty per cent of your chance for complete success depends on you and 50% depends on the tires.

You can trust yourself to deliver *your half* toward the 100%. But what about the other half?

Here is where we come in.

Goodyear Tires *deliver their full quota* toward the 100% success of the tire retailer.

They are the *wanted* tires—desired and purchased by more consumers than any other kind.

They are the tires of *satisfaction*—holding your customers after you get them.

They are the *business-getting* tires—sending new buyers to you and giving you the chance to sell each new buyer everything you handle.

With a tire less capable and less popular you cannot attain 100% of your possible sales.

You might deliver *your* full quota toward this limit, but if the tires could not deliver their part you never would reach the point.

And why be satisfied with less than 100%?

The Goodyear Tire & Rubber Company, Akron, Ohio

GOODYEAR
AKRON

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In every Riker Truck



The Riker (Locomobile Co.) Truck uses "Bound Brook" and "Nigrum" Oil-less Bearings and Bushings because—

There is no other known method of getting the smooth-running, long-wearing qualities that these **Oil-less Bearings and Bushings** give to truck or pleasure **car.**

"BOUND BROOK" (*Graphite-and-Bronze*) Oil-less Bushings are made of the finest bearing **bronze, so designed** and constructed as to retain **lubricating graphite. They are** "oiled for life" when **made and. once** installed, need no attention whatever.

Trucks equipped with them deliver better service with less attention and remain longer out of the **repair shop.** This fact is recognized by the **Locomobile Company** of America, as well as by nearly **all manufacturers** of quality-built cars and trucks made **in this country**

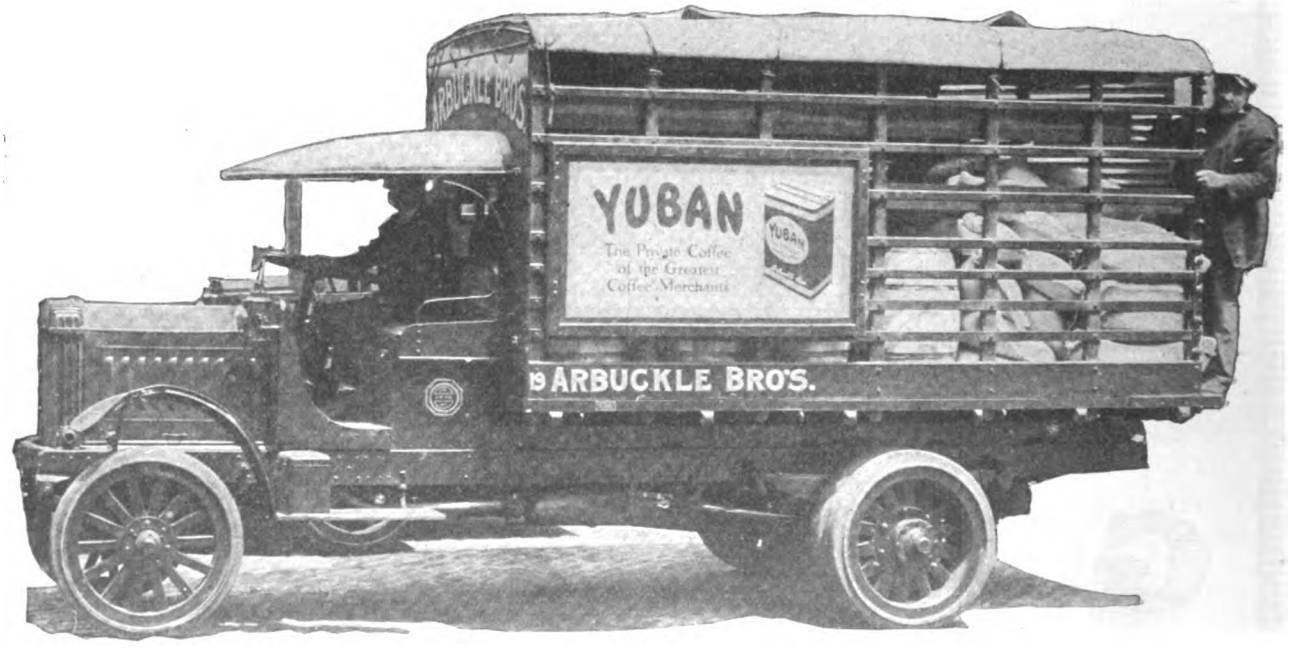
"NIGRUM" (*Impregnated Wood*) Oil-less Bearings are made of hard wood, carefully seasoned and then thoroughly impregnated with our specially prepared lubricating compound. They possess all the good points of the "BOUND BROOK" Bearings, with the additional advantage of being light in weight

Correctly placed, "NIGRUM" Bearings will run more quietly, more smoothly for a far greater length of time and at less cost than any ordinary bearing or bushing can hope to equal This is a fact that has been amply demonstrated by many years of actual service in machinery of all kinds.

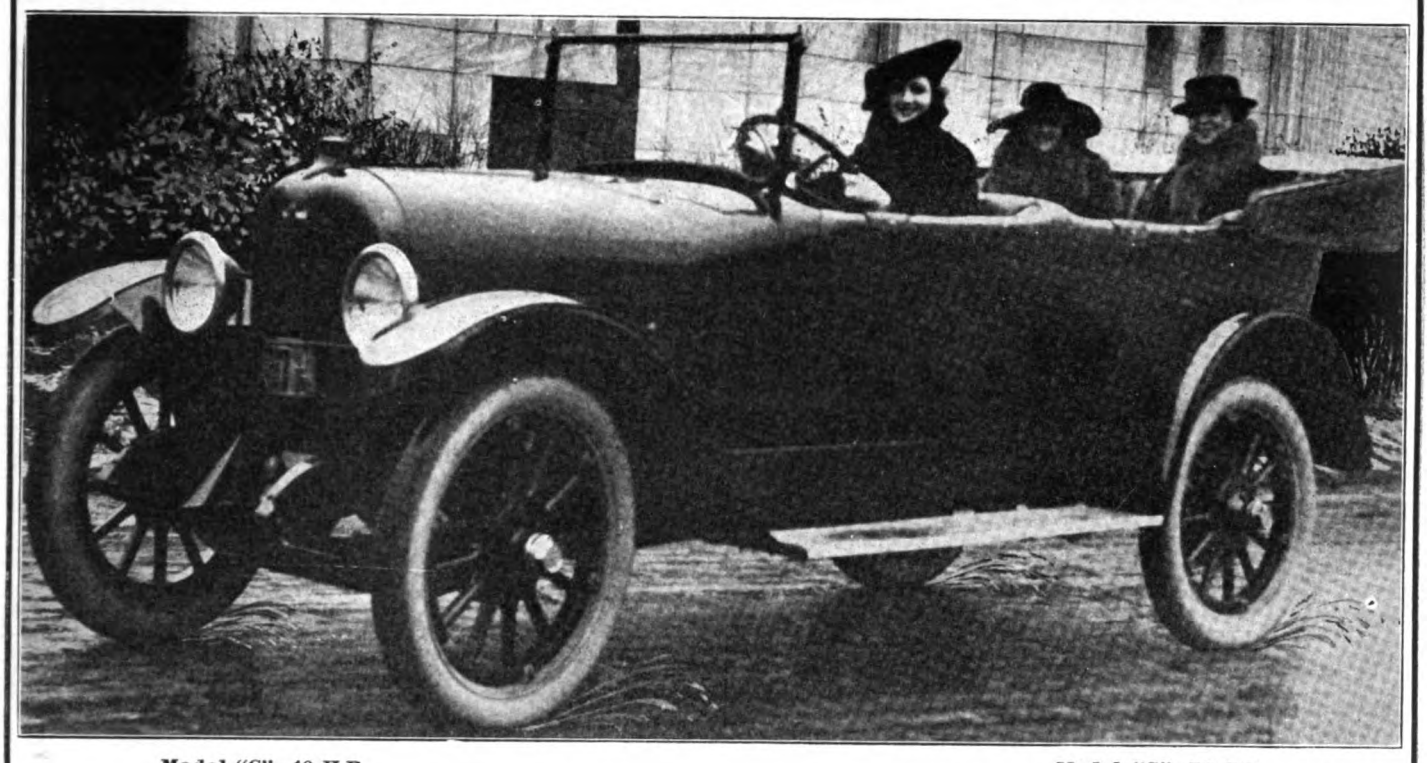
We should be glad to co-operate with any manufacturer in assisting him to solve his bearing problems. We have specialized in the manufacture of Oil-less Bushings for more than a third of a century.

All genuine graphited Oil-less Bearings have always been made at Bound Brook, U S A

BOUND BROOK OIL-LESS BEARING COMPANY
BOUND BROOK NEW JERSEY



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Model "C"—40 H.P.

5 passenger	$1495
4 passenger club roadster	1495

Model "G"—50 H.P.

5 and 7 passenger	1840
4 passenger club roadster	1840
7 passenger Springfield Sedan	2440
4 passenger coupe	2490

MOLINE-KNIGHT

No valve-grinding No valve-adjusting

No carbon troubles

Here's the one car which doesn't eat its head off on free service

Think of all the free service you have to give because of carbon troubles.

Valve-adjusting, valve-grinding, weak valve-springs, faulty timing, broken valve stems—a big percentage of your profit on many a job has been swallowed up this way out there in the shop.

And did the car-owners appreciate it? They did **not.** They were sore because their cars were laid up—and because they lacked the power, pick-up, speed, flexibility and hill-climbing ability you claimed.

They weren't getting the mileage from gas—and the engine was noisy and anything but smooth.

Besides this, because you were up against other poppet-valve cars, you probably had to cut the price. That left a slim margin for free service.

Why don't you take on a car in the medium-price class that hasn't a competitor hiding behind every bush?

A car that requires very little free service—that eliminates valve-trouble and carbon trouble, the root of most engine troubles.

A car with three-point **body** suspension which doesn't become a "rattle-trap."

A car with an engine that gets sweeter and more powerful with use—while other engines are deteriorating.

Such a car gives you a new line of selling talk—gets prospects interested. You get an "edge" on competition right off. It gets YOU on the inside of the deal no matter how close any poppet valve fellow thinks he is.

The Moline-Knight is such a car—with a big fifty at $1840 and a cracker-jack forty at $1495.

It's backed by a strong, long-established automobile maker. Its Knight motor rivals those of European make. On American soil it hasn't a peer.

Production multiplied for 1917. Big advertising campaign to city and farm folks has commenced. Prompt deliveries and good factory service guaranteed. **Don't let this get past you!** Sit down now and write for the Moline-Knight catalog and proposition!

Moline Automobile Company

E. MOLINE, ILL.

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31 Extra Features
100% Over-Strength
24% Added Luxury

Mitchell SIXES

$1460 For 7-Passenger Six—48 h. p. 127-inch Wheelbase.
$1150 For Mitchell Junior—40 h. p. 120-inch Wheelbase Six.
Both Prices f. o. b. Racine

Mitchell Junior

This year there is also a Mitchell Junior, selling for $1150. It is on the same lines as the Mitchell. But the Mitchell Junior is a 5-passenger car with a 120-inch wheelbase. And the six-cylinder motor has ¼-inch smaller bore.

25,000 Cars

With this new model the Mitchell appeals to three times as many buyers. It opens up a vast realm which was closed to the big car. So it gives the Mitchell, from the dealer's standpoint, a multiplied attraction.

To meet this added demand we shall this year build 25,000 cars. Thus the Mitchell becomes one of the very largest builders of quality cars.

Many New Features

This season we announce, for the first time, 100 per cent over-strength in every Mitchell part. John W. Bate, the efficiency engineer, has worked for three years to this end.

This season we occupy our new body plant. With the yards it covers 14 city blocks. Here all Mitchell bodies, open and enclosed, will be built under Bate efficiency methods.

The saving lets us add 24 per cent to the cost of our finish, upholstery and trimming.

Thus the Mitchell becomes the only high-grade car for which all the bodies are built by the car-maker. It also becomes one of the handsomest cars ever built.

And this year's Mitchells have 31 extra features, all of which most other cars omit.

We shall spend one millon dollars this year to tell the Mitchell facts to buyers. This places the Mitchell among the largest-advertised cars in America.

We are using magazines, national weeklies, farm papers and newspapers. And all in a way which will make the Mitchell dominate.

TWO SIZES

Mitchell—a roomy, 7-passenger Six, with 127-inch wheelbase. A high-speed, economical 48-horsepower motor. Disappearing extra seats and 31 extra features included.
Price, $1460 f. o. b. Racine

Mitchell Junior—a 5-passenger Six on similar lines with 120-inch wheelbase. A 40-horsepower motor—¼-inch smaller bore than larger Mitchell.
Price, $1150 f. o. b. Racine

Also all styles of enclosed and convertible bodies. Also demountable tops.

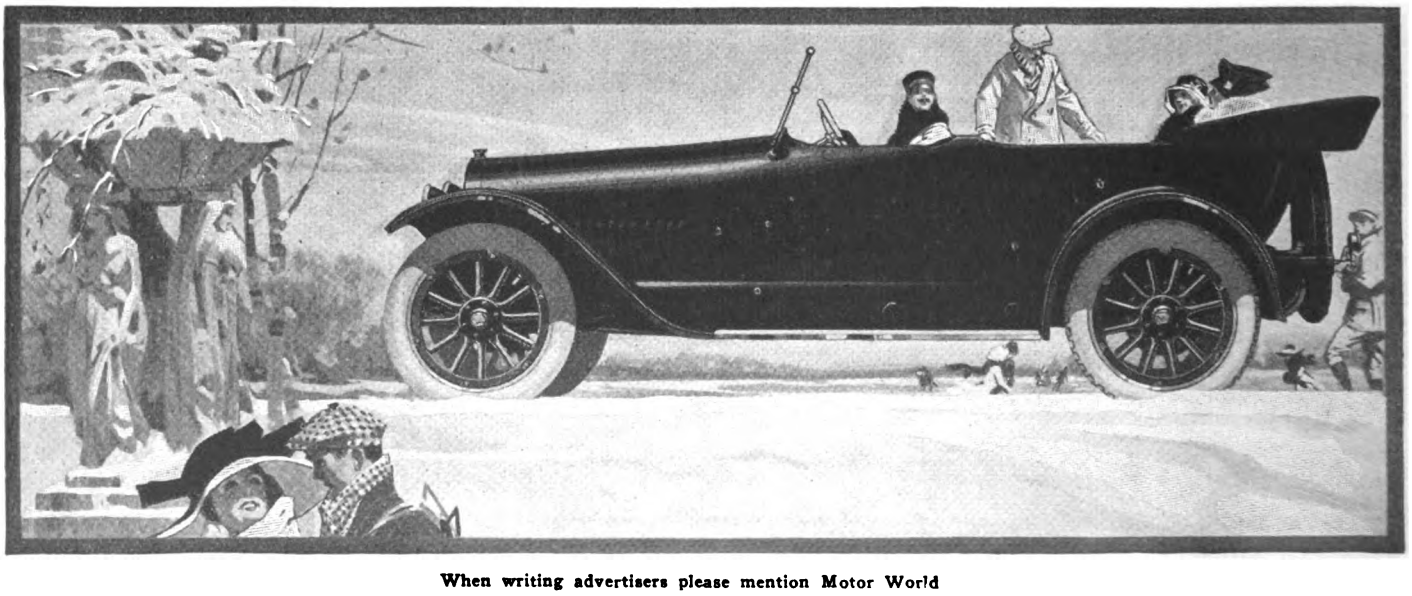
The Mitchell Appeal

The special appeal of the Mitchell lies in the results of John W. Bate's efficiency methods. This model plant, built under his direction, has cut our factory cost in two. The Mitchell car is the final result of 700 improvements he has made.

The result shows clearly in 20 per cent extra value over any other car in this class. In the over-strength, in the added beauty, in the extra features—all paid for by factory savings.

All men will know these results of efficiency. And they give the Mitchell a tremendous advantage. Every man who sells cars should measure that advantage, and judge what it means to him.

MITCHELL MOTORS COMPANY, Inc.
Racine, Wis., U. S. A.



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Experience



EIGHTEEN years' practical experience as a dealer and distributor of high quality cars in New England back my judgment on the soundness of the dealer proposition I shall make to several territorial representatives in Massachusetts, Connecticut, Maine, New Hampshire, Vermont and Rhode Island.

With headquarters in Boston, I will give the same character of service to dealers and owners as would be possible if both of my factories were located here.

I want to begin negotiations at once with the best dealers in every important New England center, and am prepared to submit a proposal that means good business and good profits during this year—and the years to come.

PATHFINDER

Twelve cylinders, 2⅞x5, in blocks of three. Crankshaft 2⅛" with three main bearings. Pressure system lubrication. Large valves. Silent motor. Unit power plant with three point suspension—trunnion carrier in front. Seven, four and three passenger bodies. Every detail of equipment cared for. The Pathfinder twelve is beautiful, it is sturdy, swift and dependable. The hit of the New York Show.

NELSON

A custom made automotive—a pleasing revelation to those motorists who know exactly what they want and are willing to pay for superior design and that distinctiveness which betokens the last word in excellence. The four cylinder engine has admittedly out-Europeaned the best of Europe. The Nelson sets a new and pleasing standard—a standard that will be welcomed by the best posted and most exacting in this country. The Nelson is an individualized car for motorists of exceptional taste.

I am ready now to discuss territory with New England dealers who are in position to render these two great cars character representation. Write, or telephone at once.

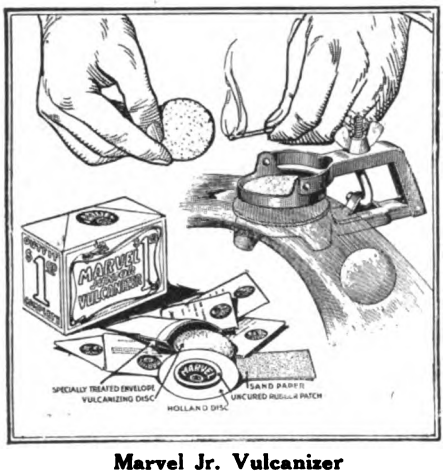
HARRY FOSDICK, President

HARRY FOSDICK Inc.

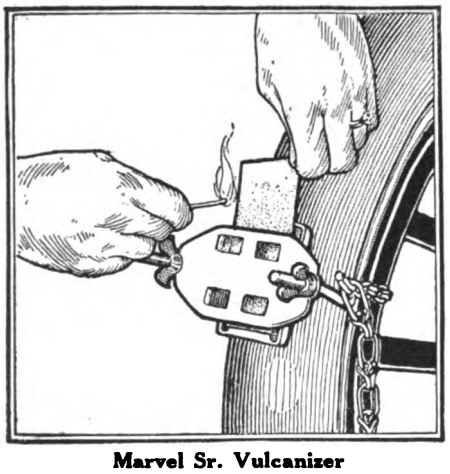
839 Boylston St., Boston
Long Distance Phone Back Bay 5752

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MARVEL



Marvel Jr. Vulcanizer



Marvel Sr. Vulcanizer

MARVEL JR. VULCANIZER—For permanently repairing tube punctures in less than five minutes. A cementless patch is always a makeshift repair and is seldom satisfactory. A patch put on with the Marvel Jr. sticks for all time. It becomes part of the tube itself. **A Chemicalized Cardboard Disc** is used for fuel instead of gasoline or alcohol. The **Junior applies the heat to the patch only,** and there is no possibility of burning the tube. Six heating units and six patches are packed with the Jr.

Price - - - - - - - $1.00

MARVEL SR. VULCANIZER—For both casing and tube repairs. Operates on same principle as Marvel Jr. Tube Vulcanizer.

A Chemicalized Cardboard Heating Element, which generates just the right amount of heat to make a perfect casing repair in less than ten minutes, is used as fuel. **Casings** can be repaired without deflating or removing from the wheel. **Wind or draft** does not affect the operation of the Marvel Senior. **Repairs** a tube in less than five minutes. **Absolutely guaranteed** to do perfect work. Experience unnecessary. Complete with outfit of supplies and plain instructions for use.

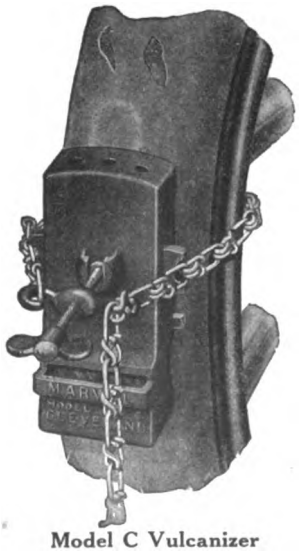
Price - - - - - - - $2.00

MARVEL JR. PATCHES AND HEATING UNITS—These patches are especially prepared for use with the Marvel Jr. One heating unit gives just the right amount of heat to make a perfect cure in five minutes. They are the only patches guaranteed to make perfect repairs with our Vulcanizer. The Heating Units are always sold with Marvel Jr. Patches.

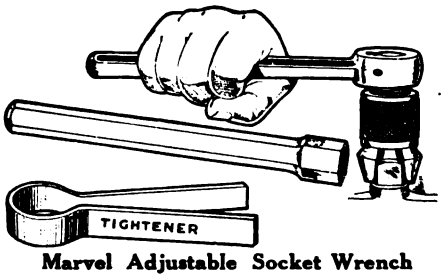
12 Patches
12 Chemicalized Discs } **To the Box - $1.00**

MARVEL SR. REPAIR MATERIAL—The Marvel Sr. Vulcanizing Gum is a raw gum of the consistency of putty, made especially for use with Marvel Vulcanizers. It is the easiest and quickest material for filling cuts or punctures ever produced. It is the only gum guaranteed to work with the Marvel Sr. Vulcanizer.

Price, ¼-Pint Can - - - - - - 50c
Tube Cement - - - - - - - 10c
Marvel Special Vulcanizer Cement, ¼-Pint Can - 25c
Chemicalized Card Board Heating Elements, 12 for 50c



Model C Vulcanizer



Marvel Adjustable Socket Wrench

The Marvel Accessories Mfg. Co.

1216 West 6th Street Cleveland, Ohio

Chicago Show, Booth 6-C, Coliseum



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QUICK SELLING ACCESSORIES

MARVEL VULCANIZERS—Gasoline Type, for Tubes and Casings; work under all conditions—can't blow out in the wind; generate an even heat—cure cuts in casings down to the fabric.
A measure furnished for gasoline generates just right amount of heat to make a perfect cure on tubes and casings.

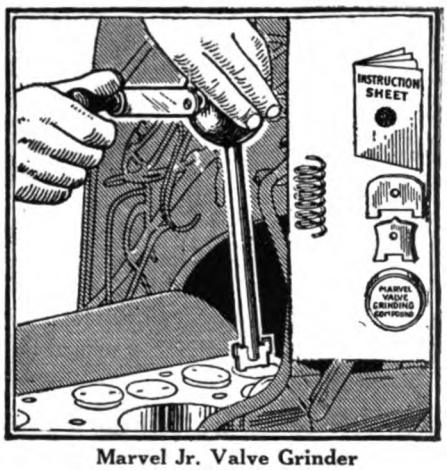
Model A—Vulcanizing Surface,	2½x3 ".	Price - -	$1.80
Model B— " "	3 x4¾ ".	" - -	3.00
Model C—(Illustrated)	3½x5 ".	" - -	3.50

MARVEL JR. VALVE GRINDER—The Marvel Jr. Valve Grinder works as easily and simply as an egg-beater. Anyone can grind a perfect seat with the Marvel Jr. Grinder. Has a smooth movement, can't jerk, rock seat or make ridges in the valve. Reaches last valve on a Ford car. Five different points are furnished with each grinder that will fit all sizes of valve stems. A can of valve grinding compound, a spring, and instructions are included with the outfit.
Price - - - - - - - $1.50

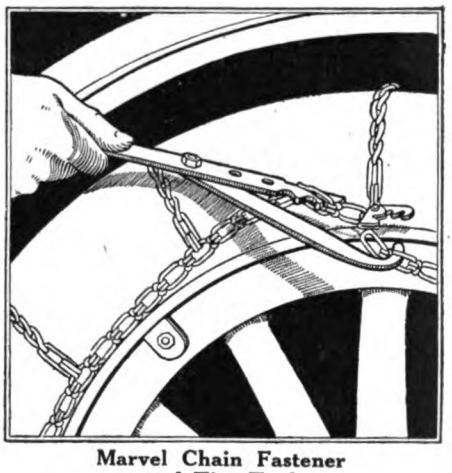
MARVEL CHAIN FASTENER AND TIRE TOOL—Three tools in one—for putting on Anti-Skid Chains; for loosening rusted casings; for use as a tire tool. It enables the user to draw the two ends of a tire chain together tightly, even though chain is badly kinked or rusted. Prevents loose chains from flapping against the fenders. Simply fasten both arms of the tool in two links of the chain and the ends can be easily drawn together and locked. For loosening rusted-on tires, slip the hook under one side, put the arm against the bead, and the enormous leverage enables you to pry the tire loose from the rim. This tool is highly nickel-plated; it is unusually easy to use as a tire tool, and is indispensable to the car owner. It is made of high-grade steel, and will last a lifetime.
Price - - - - - - 50c

MARVEL UNIVERSAL VALVE GRINDER—Turn the handle in one direction and the valve turns back and forth, always a little further in one direction than the other, eliminating any possibility of leaving rings or ridges, and makes a smooth, perfect seat in half the time required by any other method.
Price - - - - - - $3.50

MARVEL ADJUSTABLE SOCKET WRENCH—Takes the place of an entire set of sockets—fits any nut on any make of car and saves time wasted in looking for the right socket—reaches places inaccessible to the ordinary socket wrench. Made of forged tool steel—absolutely guaranteed not to break, and a new one given free if it does.
Complete wrench: Price - - - $4.00



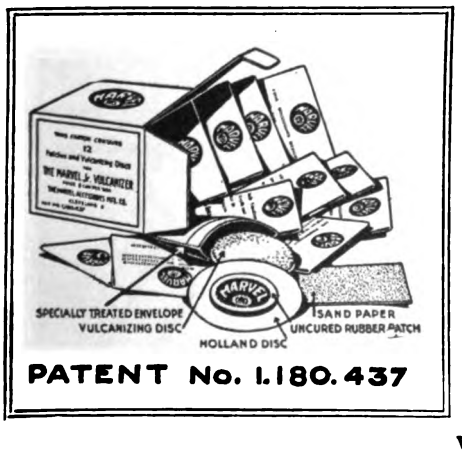
Marvel Jr. Valve Grinder


Marvel Chain Fastener and Tire Tool

The Marvel Accessories Mfg. Co.

1216 West 6th Street Cleveland, Ohio

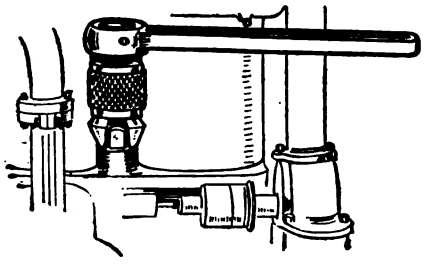
Chicago Show, Booth 6-C, Coliseum



PATENT No. 1.180.437

MARVEL

GRIPPING A CYLINDER BOLT ON A CONTINENTAL MOTOR

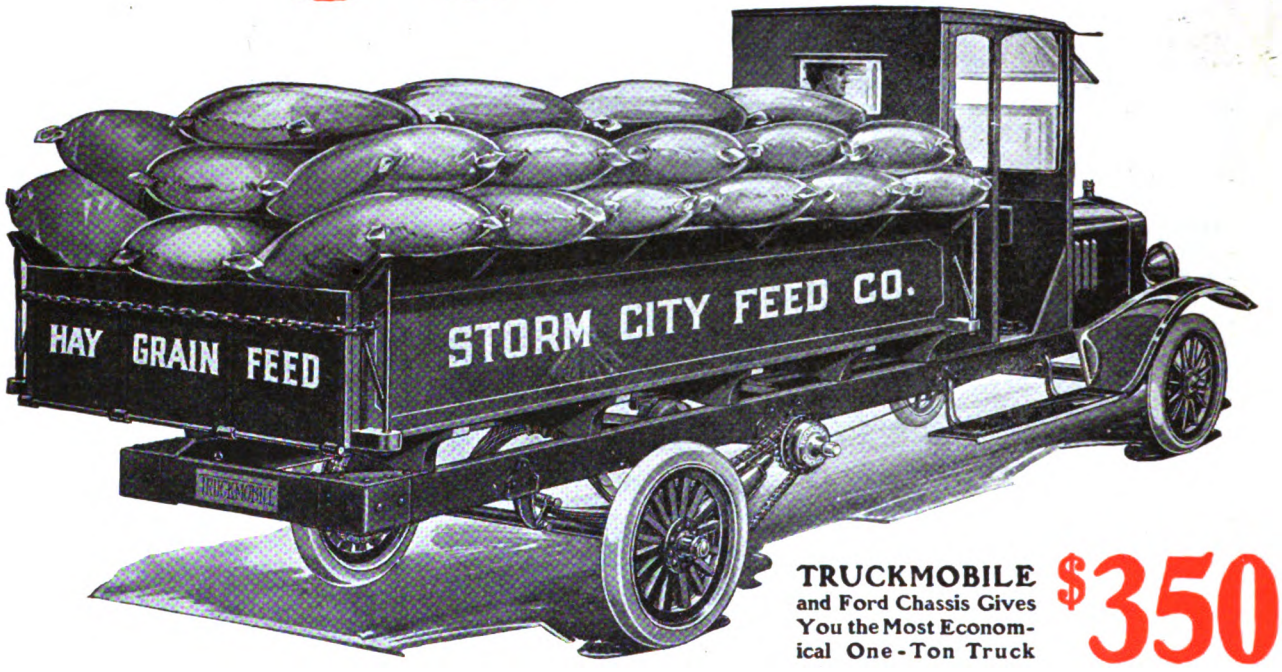




Marvel Universal Valve Grinder

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Biggest of



TRUCKMOBILE and Ford Chassis Gives You the Most Economical One-Ton Truck **$350**

Biggest Because—

1. The TRUCKMOBILE has a longer wheel base—133 inches.
2. The TRUCKMOBILE rides easier under light as well as heavy loads, due to spring construction and long wheel base.
3. Less side sway to frame and body on TRUCKMOBILE—due to method of spring attachment.
4. Wider frame—41½ inches.
5. More massive construction.
6. Fewer parts.
7. Bell sprocket that can be attached in few moments—keys onto jackshaft.
8. Requires less time of dealer for making attachment to Ford chassis.
9. Destroys none of the used or unused parts of Ford car.

TRUCK

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them all!

You Said It Would Come

YOU knew that the truck unit idea was too big a one—filled too vital a need—to stay as a makeshift. You knew that the truck unit had to be improved—standardized—just as the automobile had to be developed to its present perfection.

In other words, you knew that the TRUCKMOBILE was coming!

Real engineering did it! For the last half year TRUCKMOBILE engineers—among the biggest in the country—have been at work on the truck unit idea, *improving* it, just as the automobile had to be improved.

The TRUCKMOBILE is the answer.

As a result we are now able to come to you with a truck unit for converting a Ford car into a one-ton truck that is—

Biggest of Them All!

The TRUCKMOBILE is bigger in simplicity, bigger in strength, bigger in durability, bigger in economy, bigger in sales possibilities—bigger in everything but price and upkeep!

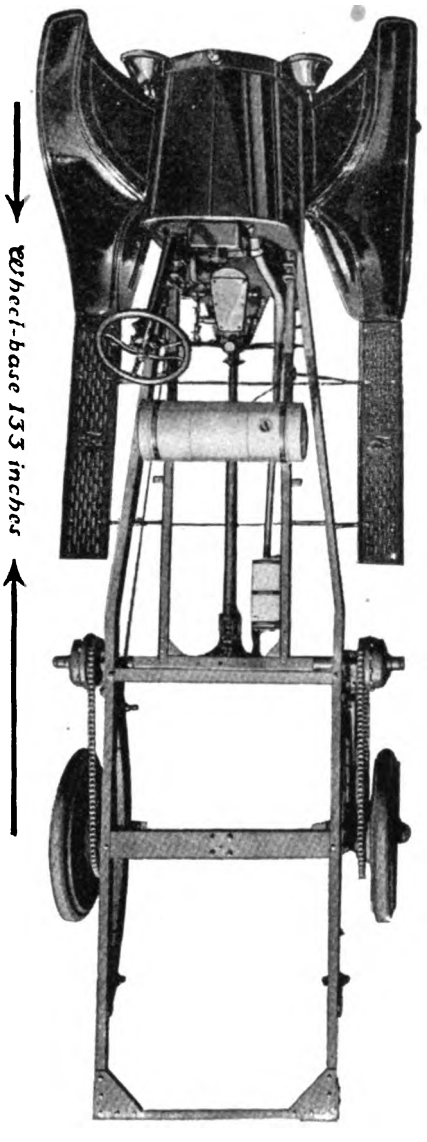
Note the eleven distinct and exclusive points of TRUCKMOBILE superiority. We have space only to list these briefly here. Write for the complete TRUCKMOBILE story and see what these eleven points of TRUCKMOBILE Bigness fully mean for TRUCKMOBILE efficiency, economy and sales possibilities.

See, for instance, the Bigness of the TRUCKMOBILE Bell Sprocket idea. The bell sprocket keys onto jackshaft same as Ford rear wheel and can be attached in a few minutes without taking down housing or cutting off Ford rear axle. Two men can attach the TRUCKMOBILE to a Ford chassis in two to three hours, while it takes 8 to 10 hours or more to attach others. Think what a Big source of profit there is in this fact alone!

The TRUCKMOBILE is the best attachment for dealer to sell because it is the best for consumer to buy.

Only one dealer in your territory can be the TRUCKMOBILE dealer. Will it be you? Write us today and see what TRUCKMOBILE Bigness will mean for every TRUCKMOBILE dealer—see, too, what Bigness there is in TRUCKMOBILE profits.

Don't delay—don't wait. Write, wire, or, better yet, come in and see us at once.



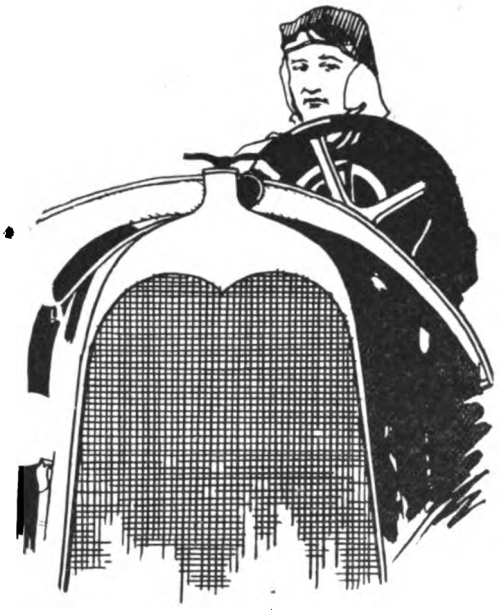
The Commercial Truckmobile Company

E. F. KIRCHBERGER, *President*

Dept. E-1, 1606 Michigan Blvd., Chicago, Illinois

MOBILE

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VICTORIES

Nothing demonstrates the position of FEDDERS Radiators in the American automobile game more clearly than the results of the races. Taking the racing results since mid-summer, we want to call your attention to the performance of cars equipped with

FEDDERS RADIATORS

Here is a résumé of the Fedders' racing record for 1916.

Thirteen "firsts" out of twenty-seven officially sanctioned events. Forty-two "places" finished—and no Fedders-Equipt car was delayed at any time or forced to withdraw on account of cooling trouble.

1916 FEDDERS VICTORIES

CONEY ISLAND CUP RACE, 20 MILES, NEW YORK, MAY 18.

Car and Driver	Finish
Maxwell—Rickenbacher	4
Maxwell—Henderson	5

METROPOLITAN TROPHY RACE, 150 MILES, NEW YORK, MAY 13

Maxwell—Rickenbacher	1

INDIANAPOLIS INTERNATIONAL SWEEPSTAKES, 300 MILES, MAY 30

Maxwell—Henderson	6
Premier—Wilcox	7

DES MOINES 150-MILE RACE, JUNE 24

Maxwell—Henderson	2
Maxwell—Rickenbacher	3
Stutz—Cooper	5

SIOUX CITY 10-MILE RACE, JULY 8

Premier—Wilcox	4

SIOUX CITY 20-MILE RACE, JULY 8

Premier—Wilcox	1

SIOUX CITY 50-MILE RACE, JULY 8

Premier—Wilcox	1

OMAHA 50-MILE RACE, JULY 15

Maxwell—Rickenbacher	2
Maxwell—Henderson	3

OMAHA 150-MILE RACE, JULY 15

Maxwell—Henderson	4

TACOMA MONTAMARATHON, 300 MILES, AUG. 5

Maxwell—Rickenbacher	1
Maxwell—Henderson	5

CINCINNATI DERBY, 300 MILES, SEPT. 4

Peugeot, Aitken	1

INDIANAPOLIS 20-MILE RACE, SEPT. 9

Peugeot, Aitken	1
Premier, Wilcox	2

INDIANAPOLIS 50-MILE RACE, SEPT. 9

Peugeot—Aitken	1
Premier—Lewis	5

INDIANAPOLIS 100-MILE RACE, SEPT. 9

Peugeot—Aitken	1
Premier—Lewis	5
Maxwell—Henderson	7

ASTOR CUP RACE, 250 MILES, NEW YORK, SEPT. 30

Peugeot, Aitken	1
Maxwell—Rickenbacher	2

GRAND AMERICAN, 250 MILES, CHICAGO, OCT. 14

Peugeot—Resta	1
Peugeot—Aitken	2
Maxwell—Rickenbacher	3
Premier—Lewis	4
Maxwell—Henderson	5
Premier—Galvin	6

HARKNESS TROPHY RACE, 100 MILES, NEW YORK

Peugeot—Aitken	1
Premier—Galvin	2
Peugeot—Wilcox	3
Maxwell—Henderson	4

VANDERBILT CUP RACE, 294 MILES, SANTA MONICA, CAL., NOV. 16

Peugeot—Resta	1
Stutz—Cooper	2

GRAND PRIZE RACE, 403 MILES, SANTA MONICA, CAL., NOV. 18

Peugeot—Aitken-Wilcox	1
Stutz—Cooper	2

ASCOT DERBY, 150 MILES, LOS ANGELES, CAL., NOV. 30

Stutz—Cooper	2

UNIVERSAL TROPHY RACE, 112 MILES, UNIONTOWN, PA.

Premier—Lewis	2

This showing proves that the FEDDERS is still in its place as the foremost American Radiator.

FEDDERS MANUFACTURING CO., INC.

BUFFALO, N. Y.

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These Are The Kind of Cold Days In February and March That Sell UTILITY Protected Heaters

Feb. 13, 1905 18° Below Zero	Mar. 2, 1913 4° Below Zero
Feb. 17, 1903 11° Below Zero	Mar. 1, 1912 6° Above Zero
Feb. 4, 1912 7° Below Zero	Mar. 2, 1914 10° Above Zero
Feb. 23, 1910 6° Below Zero	Mar. 22, 1906 10° Above Zero
Feb. 8, 1914 6° Below Zero	Mar 4, 1916 12° Above Zero
Feb. 5, 1913 2° Below Zero	Mar. 16, 1911 13° Above Zero

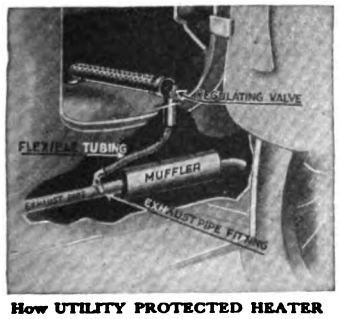


YOU'RE JUST IN TIME TO CASH IN ON THE WEATHER

Cold snaps have already made thousands of motor car owners buy UTILITY Heaters. Consistent cold weather—zero and below—prolonged through February, and chilling blasts that blow from one end of March to the other, will convince thousands of others who have waited.

UTILITY Protected Heater is a ready seller. Popular foot rail type. *Only one standard model to carry in stock,* for all cars other than Fords. *One Junior model for Fords.* Big business getters wherever introduced. Most satisfactory to use. Most desirable to sell, at prices that are right—*$15,* and *$7.50 for Fords.*

Write for liberal dealers' proposition. Your jobber has the UTILITY line.



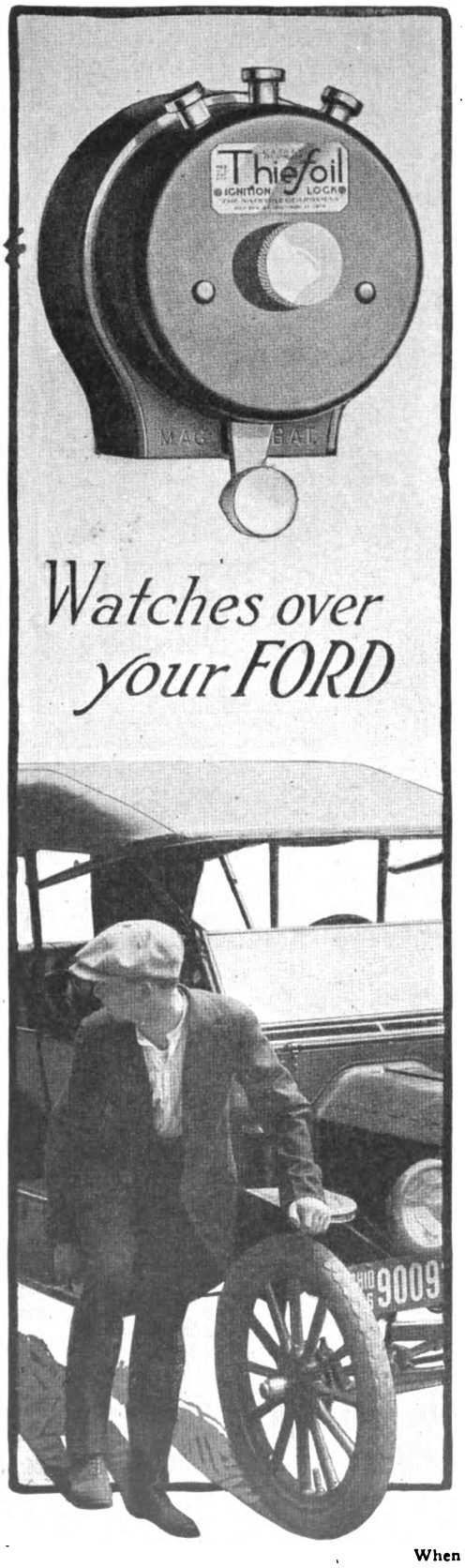
How UTILITY PROTECTED HEATER Is Attached to the Exhaust

Hill Pump Valve Co.
Archer Ave. and Canal St.
CHICAGO
Manufacturers of the Famous UTILITY Auto Specialties

No Need To Ask More
Standard Model $15
Utility Jr. For Fords $7.50
Unwise To Ask Less

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FOILED!



IN nearly every case an automobile is stolen within a very few minutes after it has been left by the owner. Delay is fatal in an attempted theft. And there is no inclination in the mind of any motor car thief to steal a Ford protected by the

Thiefoil Ignition Lock

"The National Guardsman"

The **Thiefoil Ignition Lock** opposes an obstacle impassable in the limited time in which a thief has to work. It is a combination lock **without dials** and **without keys.** Operated in less than half the time of any ordinary combination or key lock with gloved or ungloved hand when the correct combination is known, without this knowledge it cannot be unlocked even through hours of effort.

The demand for **Thiefoil Ignition Locks** is only limited by the number of Ford owners you can reach. It is the cheapest form of insurance against theft that they can buy. And it is the one form they all want. The **Thiefoil Ignition Lock** can be attached to any Ford Car in a few minutes time. No changes in the wiring are required—no special tools.

CASKEY-DUPREE
REG. U. S. PAT. OFF.
Thiefoil
IGNITION LOCK
"THE NATIONAL GUARDSMAN"
PAT. DEC. 24, 1912 – NOV. 11, 1913

Price $3.50

Your Jobber carries **Thiefoil Ignition Locks** in stock. We have prepared a full line of selling helps that we will gladly furnish you FREE. Don't delay. Write us now—let us give you full information.

The Caskey-Dupree Mfg. Co.

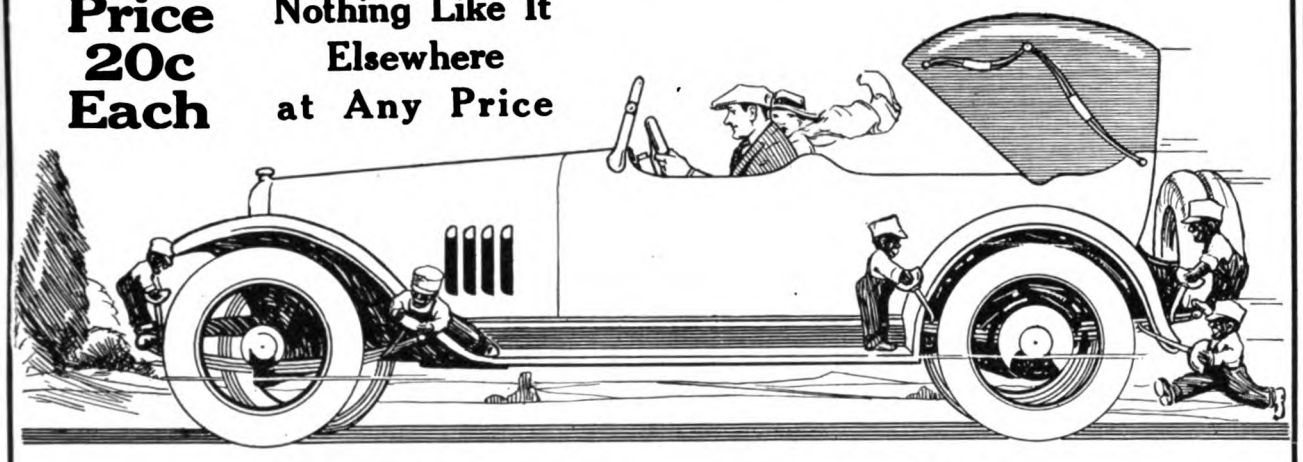
Marietta, Ohio

When writing advertisers please mention Motor World

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Price 20c Each

Nothing Like It Elsewhere at Any Price



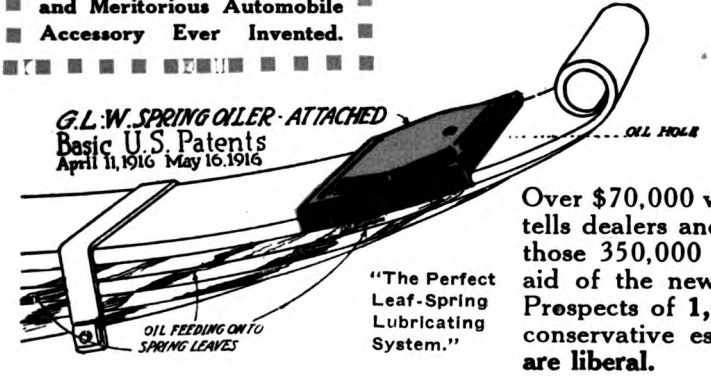
The G. L. W. Spring Oiler

Is Like An Army of Oilers at Work All the Time

AWARDED GOLD MEDAL

at Panama-California Exposition as the Most Efficient and Meritorious Automobile Accessory Ever Invented.

If an army of workers could follow every car your patrons own, constantly oiling the springs, mile after mile, they would approximate the service of the G. L. W. Automatic Spring Oiler. This little device, that retails for only **20c,** takes the place of shock absorbers and expensive spring oiling devices. Gives perfect, uninterrupted service. Saves its price in every hundred miles of travel.



"The Perfect Leaf-Spring Lubricating System."

Over 350,000 Sold The First Six Months On the Market

Over $70,000 worth of sales in 6 months is the story that tells dealers and jobbers what you want to know. And those 350,000 G. L. W. Spring Oilers sold without the aid of the new advertising campaign now in progress. Prospects of **1,000,000 sold in the next six months** is a conservative estimate. **Profits for dealers and jobbers are liberal.**

We Guarantee to Replace Any Spring That Breaks After G. L. W. Spring Oilers Are Installed and in Use 60 Hours

Underneath View of G. L. W. Spring Oiler



—which proves that we know G. L. W. Spring Oilers prevent spring breakage, rust, squeaks and crystallization. They put new life into old springs. Attached in a second. Last a lifetime.

Just a rust-proof Russian blued metal case and felt pad, snapped over main leaf of spring. Forms a reservoir for lubricating oil, that under pressure from spring action seeps slowly along the entire sides and underneath the surface of the spring. Action of the spring works oil through entire length and width of the spring between the leaves.

There should be a stampede for G. L. W. Spring Oilers. Be ready for the profits. **Use the coupon now for details and liberal discounts.**

HUDSON SALES COMPANY

7 E. Jackson Blvd., Chicago

Use the Coupon Now

HUDSON SALES COMPANY
7 E. Jackson Blvd., Chicago

Please send me full information regarding discounts and proposition to dealers.

Name.....

Address.....

(Kindly attach coupon to your business letterhead.)

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Every Dealer and Jobber Should Carry One Piston Ring He Can Conscientiously Recommend

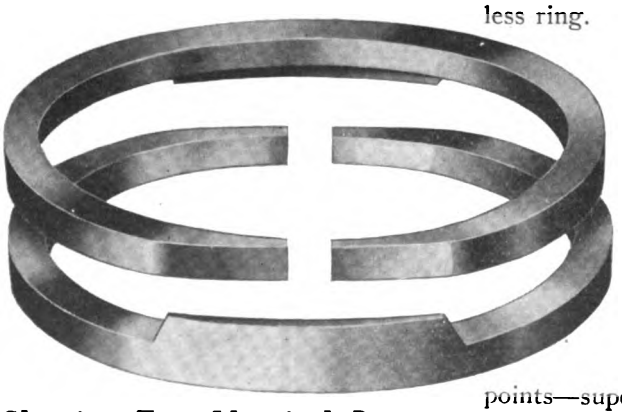


As It Appears Installed in Your Motor. No Joints on the Outside

Jointless
PATENTS PENDING

the

PISTON RING You Can Conscientiously Recommend



Showing Two Identical Parts of the Jointless Piston Ring

There are many reasons for carrying different brands of piston rings—not the least important of which is advertising that creates a demand.

But, regardless of the reasons you may have for stocking various lines, as a dependable jobber or dealer you owe it to yourself and to your patrons to stock one brand you can conscientiously recommend.

The JOINTLESS is the most satisfactory piston ring for dealers or jobbers to handle.

The Retail Price is Uniformly $1 for all Sizes

Not only is this price lower than others—because JOINTLESS output is unlimited, and the demand is already heavy—but the convenience of a one-price ring is worth money to jobbers and dealers in selling, handling, and actual profits.

The JOINTLESS is the only two-piece ring with both members exactly the same size, strength and form. It has no dowel pin to break off and score the cylinder. Its *construction* holds the parts together *without* any weakening pin.

The JOINTLESS Piston Ring can expand to a distance equal to its thickness, and still not leak. Its flanged construction makes it positively, from the outside, a jointless ring.

We want you to examine the JOINTLESS Ring before you stock it. *You* must be sold before you can sell it. But it may interest you to know that one jobber—well known and most influential in the Middle West—stocked and catalogued JOINTLESS Piston Rings last year, after *contracting for our entire output.*

Increased facilities now remove all production limitations. Our advertising is started. JOINTLESS Piston Rings are selling now on the two best selling points—superiority and lower price.

Write for liberal dealer and jobber discounts.

DETROIT PISTON RING CO., Mfgrs.

20 EAST JACKSON BLVD.
CHICAGO, ILL.

Factory: 49-57 Richmond St.
Detroit, Mich.

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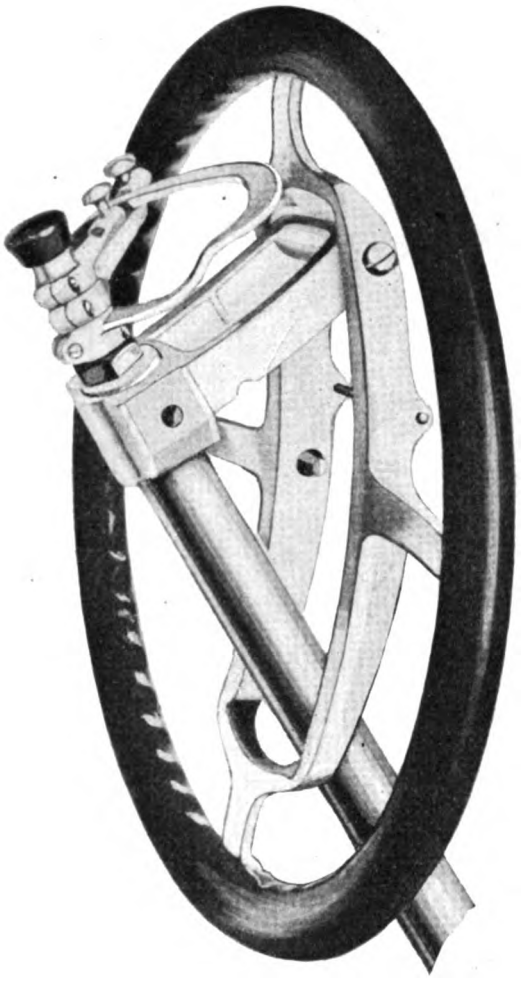
The Vincent Clear-Room Steering Wheel
IS SOME WHEEL

FOR ALL OWNERS

MANUFACTURERS
JOBBERS

See us at the Chicago Show

ABSOLUTELY GIVES THE DRIVER MORE CLEARANCE THAN ANY OTHER STEERING WHEEL

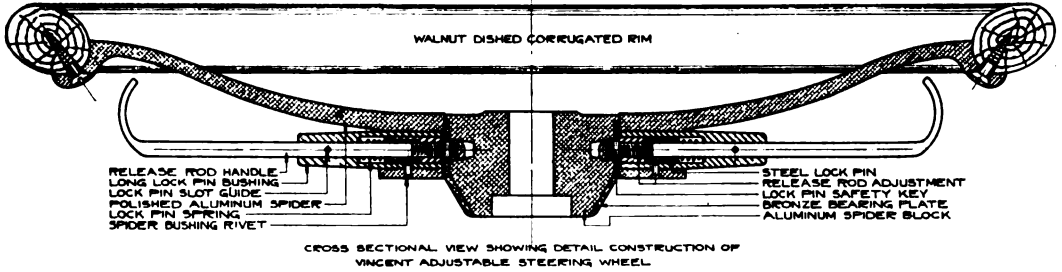


DISTRIBUTORS
DEALERS

See us at the Detroit Show

PUT ON ANY MAKE CAR IN A FEW MINUTES

OPERATES WITH ANY SLANTING OR VERTICAL WINDSHIELD



CROSS SECTIONAL VIEW SHOWING DETAIL CONSTRUCTION OF VINCENT ADJUSTABLE STEERING WHEEL

MAKES DRIVING A PLEASURE ALL SEASONS

NO MORE TWISTING AND CROWDING UNDER THE WHEEL, NO TROUBLE WITH *HEAVY COATS, WINTER CLOTHING, ROBES OR CURTAINS.* MORE THAN 8 INCHES ACTUAL CLEARANCE BACK OF STEERING HEAD, AND ADDITIONAL KNEE ROOM FORWARD. A MOTION RELEASES—THE VINCENT DROPS BACK, WITHOUT SHOVING OR EFFORT. A SINGLE MOTION BRINGS IT UP INTO DRIVING POSITION AND LOCKS IT.

LIBERAL DISCOUNTS TO THE TRADE—WRITE US

Vincent Clear-Room Steering Wheel Co.

786 Woodward Avenue, Detroit, Michigan

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How to Make Big Money Vulcanizing Tires

HALF your problem is solved. You have the customers and a place of business. Your overhead is fixed. You have workmen that can repair tires as well as they can do any other kind of repairing.

All you need now is the vulcanizer, an economical, simple, inexpensive outfit that will enable your workmen to do every practicable kind of tire work perfectly and at a profit to you.

Shaler Vulcanizers fill these requirements perfectly. Casing repairs are made with half the cost of time and material required by old methods. The Wrapped Tread Method is so simple that anyone can understand it. The initial cost of the vulcanizer and its cost of operation are only a fraction of the cost of other equipment that can neither do more work nor make as good repairs.

These are some of the reasons why the Shaler Vulcanizer has been accepted as standard by the jobbers and is in successful use, frequently displacing machines that cost several times as much, in the leading automobile factories, repair shops, and automobile schools.

Plan now to get the profits on your customer's tire repairs and to make new customers by giving complete car service.

Send the coupon today for our new 1917 catalog, the most complete vulcanizer catalog ever published.

C. A. SHALER CO.
448 Fourth St., Waupun, Wis.

The Shaler Line of Vulcanizers
(or "Profits for Accessory Dealers")

The Shaler Line includes the most popular motorist's vulcanizers on the market—models selling from $1.50 to $12.50—every one in demand and every one bearing a generous margin of profit.

Our 1917 advertising campaign is going to bring them more forcibly than ever to your customers' attention.

Ask your jobber's salesman about the famous "Vul-Kit" and the new "5-Minute." He will tell you what other dealers are doing with them.

Opportunity Coupon

C. A. SHALER CO.,
448 Fourth St., Waupun, Wis.

Send new catalog of Vulcanizers for Motorists and Repair Shops.

Name .....

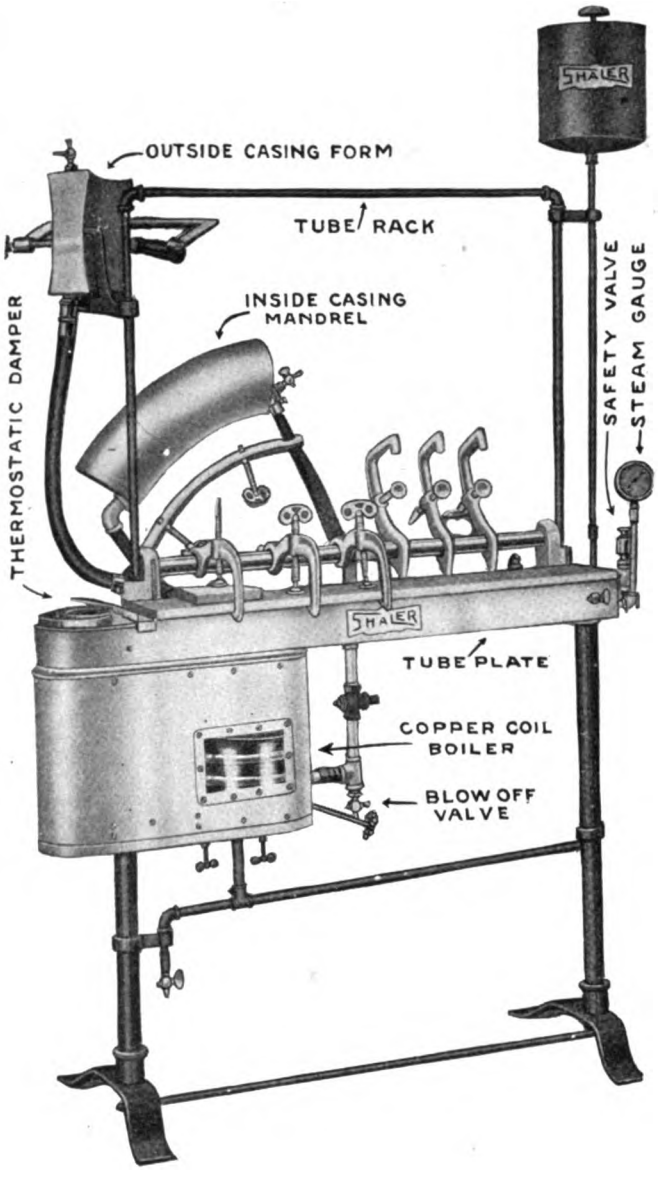
Address .....

Do you sell accessories? .....

Jobber's Name .....

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At the Chicago Auto Show



SHALER

Steam Heated

Vulcanizing Plant, $65.00

Subject to Trade Discount

Repairs 200 tubes and a dozen casings daily. Temperature controlled automatically. Heats in 25 minutes—needs no regulating. Casings repaired by approved Wrapped Tread Method—no airbags.

No other guaranteed steam vulcanizer at near the same price has so great a capacity, heats so quickly, or operated so simply.

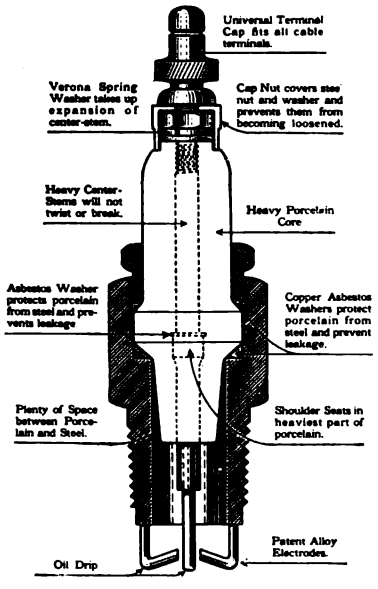
Widely used by the United States and foreign governments. Standard equipment in the majority of good repair shops. The only shop vulcanizer sold by 97% of the leading jobbers—year after year.

Ask Your Jobber's Salesman

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FULTON AUTOMOBILE SPECIALTIES

"Eklips" "A Spark Plug of many merits"



Any man who is at all versed in the details of spark plug construction can see, at a glance, on this sectional view of the "Eklips" *why* it is a superior plug and *why* it gives such satisfactory service.

Multi-Point
That tells its own story.

Oil-Drip
Prevents fouling of sparking points.

Soot-Proof
Deep chamber enables plug to clear itself of soot at every shot.

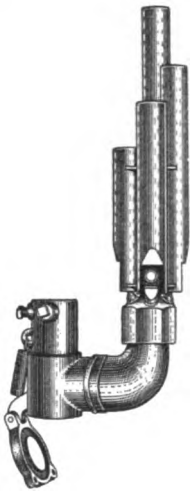
Leak-Proof
Note careful provisions to prevent leakage.

The "Eklips" is very carefully finished and for *that* reason sells readily. In service it gives full satisfaction and for *that* reason it sells readily. Always a hot spark.

Specially heavy construction throughout. Made in different styles, sizes and threads to fit all pleasure and commercial cars.

Please See Your Jobber

"The Signal with a smile" The AERMORE Exhaust Horn

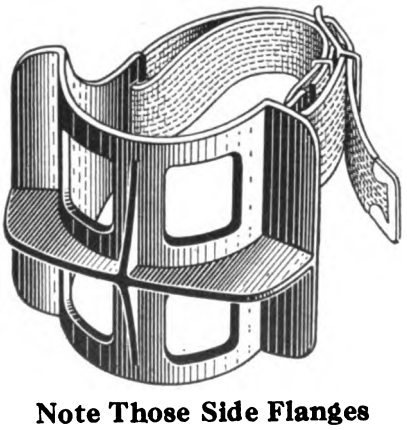


Why put a horn on the car that screeches like a maniac at the pedestrian six feet away, scaring him out of a year's growth? Why irritate your own nerves and those of your guests in the car? Motorists are beginning to ask these questions insistently.

The AERMORE is the answer. No need for these things at all when they can get a horn that gives an effective signal at short or long distances—one that never frightens but is a pleasure to hear.

And it's a **good** horn—no upkeep expense and no clogging; no wires, batteries or movable parts to wear or get out of order. Lasts as long as the car and is good as long as it lasts. Three sizes fit all cars.

Please See Your Jobber



Note Those Side Flanges

Fulton Mud Hooks

Here's a little patented device which almost sells on sight to any motorist who has been stuck in the mud. Made of malleable iron with strong web strap. Buckle one on each rear wheel. The side flanges grip the mud, snow or sand, giving good traction and enabling the car to lift itself out. Can be put on or removed in a minute; occupy small space in tool box; cannot turn sideways to injure car or tires.

By long odds the most efficient and satisfactory article of its kind on the market—a satisfaction giver and a quick seller. Four sizes to fit all cars.

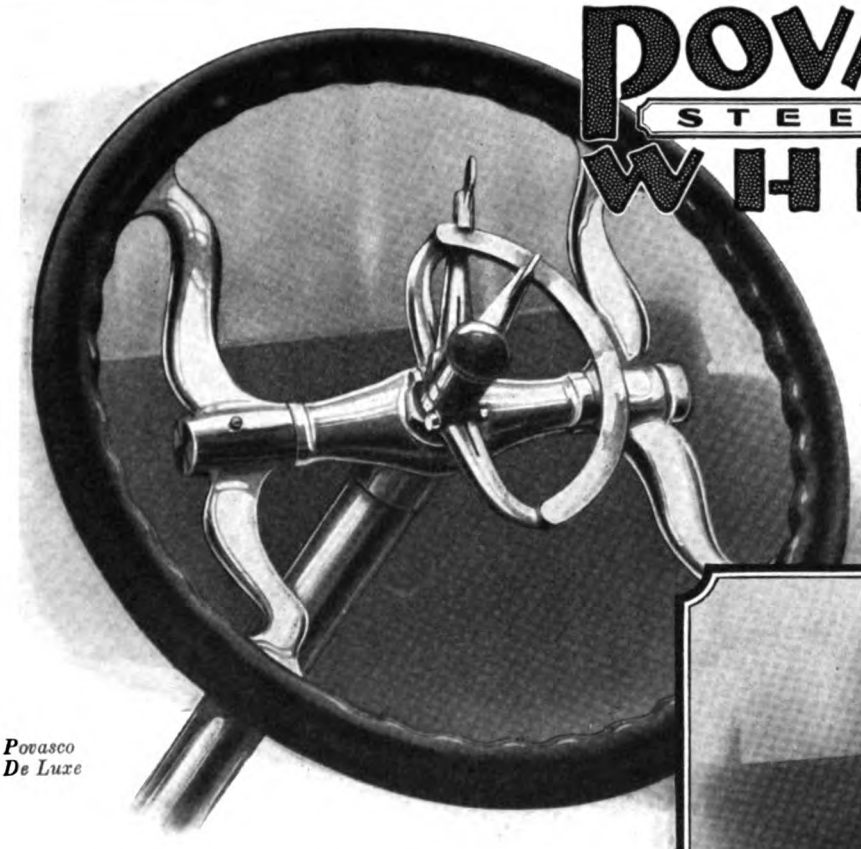
Please See Your Jobber

MANUFACTURED BY

THE FULTON CO. 721-723 National Ave. MILWAUKEE, WIS.

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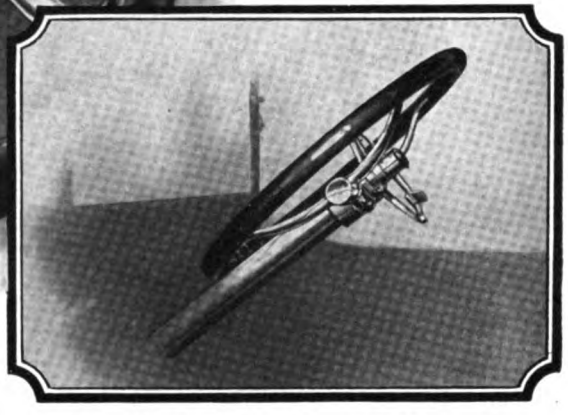
POVASCO STEERING WHEELS



Povasco De Luxe

The fundamental advantage of Povasco Steering Wheels is their Bakelite or Condensite construction.

Povasco Tilted



EVERY driver who has ever handled a wooden wheel, no matter how fine, can instantly appreciate the permanent, brilliant finish and the practical indestructibility of this splendid wheel. For its construction alone is a sufficient selling feature, and there is a big market for the plain Povasco Wheel.

But we go further—we make this wheel also with the cleverest tilting feature that has been shown. At will it can be tilted forward or back, either way permitting easy entrance to, and exit from, the driver's seat. The tilting feature multiplies the attractiveness of the Povasco proposition.



Povasco Model L

A great proposition for distributors. You do not need much money to start, and if you want to MAKE money, and know the business, here's a great chance. Write or wire—territory closing up quickly.

In a third model, instead of the tilting feature we have the Warm Hand attachment, a push button turning the heat on or off at will. You don't see it— no fussy contraptions—simply electric wiring self-contained in the moulded wheel, ready to give you heat every time you want it, at the touch of a button.

A fourth model contains both tilting and heating features. This is the De Luxe Model of the line, and was an instantaneous and continuous hit at the New York show. It is absolutely the last word in driving comfort and convenience and will create a favorable impression wherever shown and demonstrated.

Model L. Povasco with polished aluminum spider ready for machining. Finger grips—ribbed on outside. Size 18 in. Price, $15.

Model R. Povasco with Tilting attachment. Size 18 in. Price, $20.

Model G. Povasco Warm Hand Wheel. Size 18 in. Price, $20.

Model H. Povasco De Luxe. Combining Tilting and heating features. Size 18 in. Price, $25.

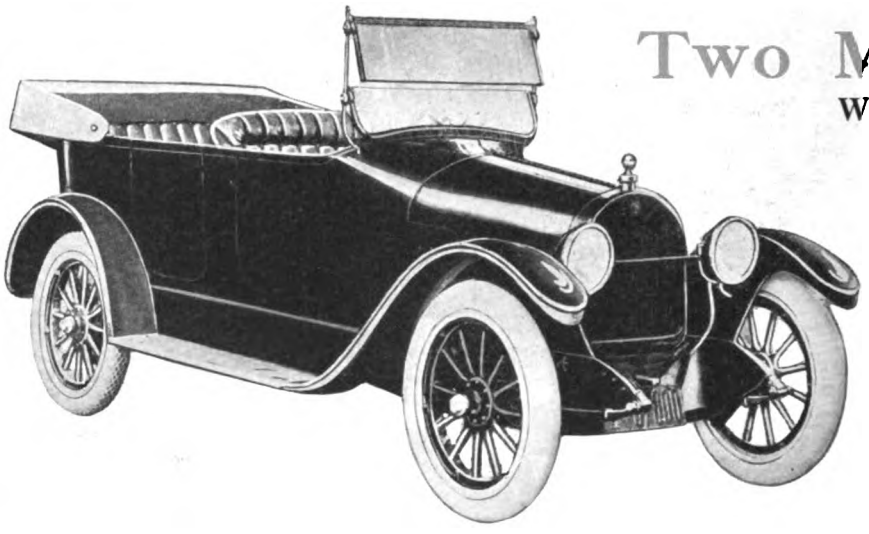
Write for Beautiful Catalog.

Exhibiting at Chicago— Coliseum Basement, Space 18A

Pouvailsmith Corporation
Poughkeepsie New York

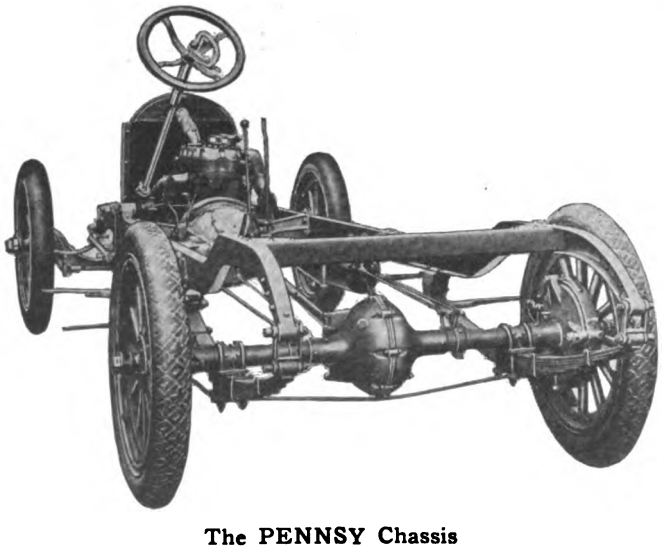
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On Your Way Stop and See



Two Models
Wire Wheels

Dealers—Make Our Show *Right on*



The PENNSY Chassis

If you come into Chicago at the Twelfth Street Depot, step around the corner to **1223 S. Michigan Avenue**—and leave your luggage at our display room while you go to the Show.

If you come in at any other depot, phone **Calumet 424**, and we'll come after you with one of the PENNSY Show Cars.

We'll take you to the show, or wherever you want to go. Phone us for information—or a car—at any time. Drop into our show space—**right on Automobile Row, near the Coliseum**—and get acquainted with the PENNSY car and PENNSY men.

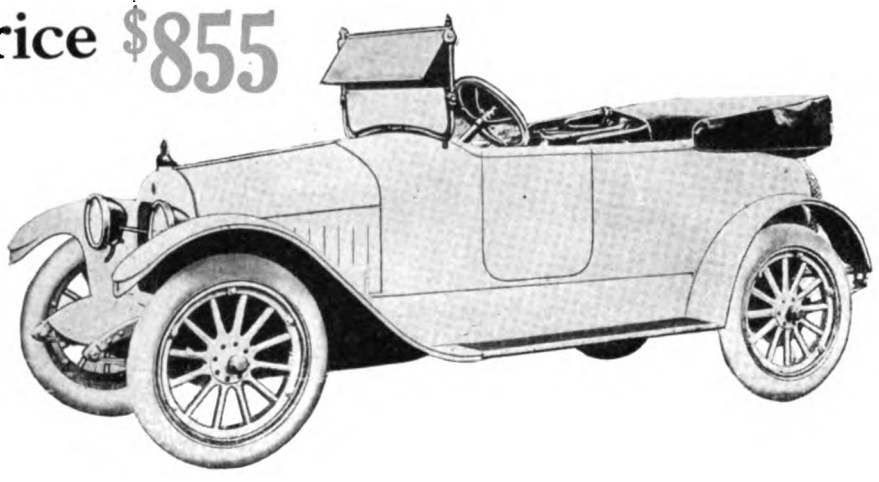
No matter how many cars you may push and shove your way through mobs to see at the Show, the PENNSY Cars will show you something new—where you can **see it in comfort, at your leisure.**

PENNSY MOTORS
PITTSBURGH

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to the Show
The Pennsy Cars

One Price $855
$100 Extra

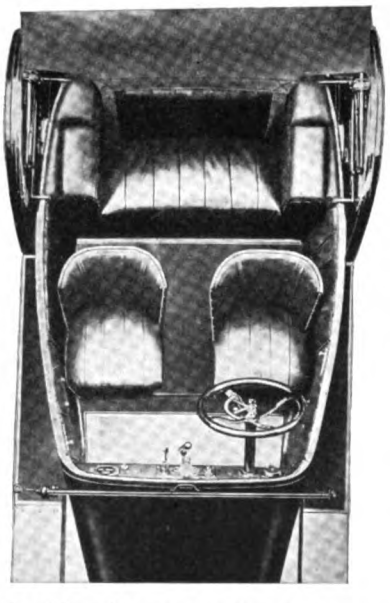


Room Your Headquarters

Automobile Row

All the time you are looking at cars below $1000 at the Show, remember the big SALES and SERVICE Features of the PENNSY Cars.
PENNSY appearance, artistic lines, convenient arrangement, and up-to-date style insure sales.
Two models—**5-passenger touring and Friendly Four Roadster.** Tested under most adverse conditions on noted bad roads near Pittsburgh. Give 17 miles to the gallon of fuel, and 250 to the gallon of oil. Extra long, cradled, 9-leaf rear springs, besides these parts you know: Zenith Carburetor, Connecticut Ignition, Willard Storage Battery, Schwartz Wheels, Gemmer Steering Gear, etc.
PENNSY SERVICE—**most important to dealers—is unsurpassed. Any order for repair parts, received at the factory before 5 o'clock, is shipped out the same day**—and everything else about PENNSY Cars and PENNSY Service is on the same basis.
Don't forget to **stop and see PENNSY Cars on your way to the** Show. Or **we'll come after you if you phone Calumet 424.**

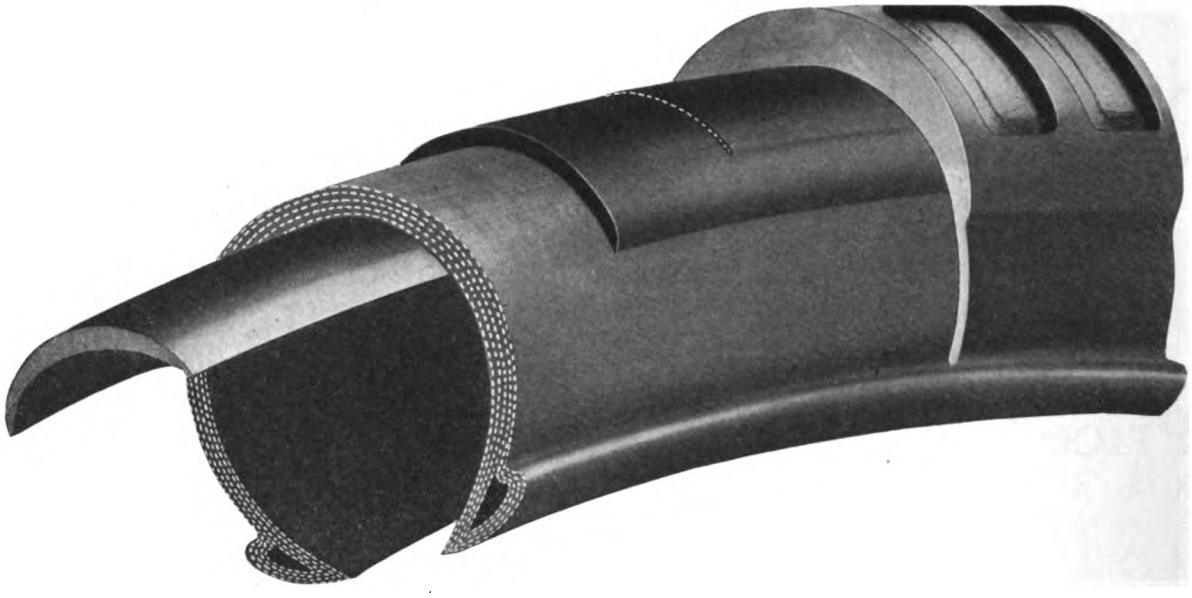
AN OPPORTUNITY LIVE DEALERS CANNOT AFFORD TO OVERLOOK



Looking Down on the Roomy Interior of the PENNSY Friendly Four

COMPANY OF PITTSBURGH
PENNSYLVANIA

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WOODWORTH TROUBLE-PROOF // TIRES //

5,000 Miles of Tire Comfort—and Certainty!

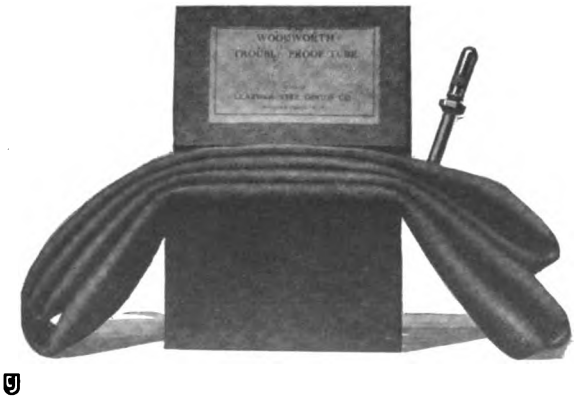
The Woodworth is not only guaranteed against puncture or blow-out, but also against ordinary wear and tear. It is a lively, fast, resilient tire, made of the finest materials according to the best methods.

It is not a freak. There is no metal in it. Simply a specially prepared strip of non-wearing Chrome leather, perfectly fitted to the inner side.

While built and guaranteed to run at least 5,000 miles without tire trouble, it is actually making a much higher mileage on all sorts of roads all over the country. The tire itself is a better guarantee against tire trouble than any adjustment contract ever written.

DEALERS can sell this to anybody who wants real tire comfort and certainty. It has no rival.

We are looking for the kind of dealers who are in business to stay and who are looking for a tire that will deliver service—a tire that makes for satisfied customers. We will give these dealers exclusive territory and back them with *real* co-operation.



WOODWORTH TROUBLE-PROOF TUBES

—are made of tough, live rubber, antimony cured. They are hand made and cross plied to guard against tearing in any direction. Ask your dealer to show you one—feel it—stretch it. Try one—protected by our full guarantee. It will save your casings and save you trouble.

WOODWORTH MANUFACTURING CORPORATION

Niagara Falls, New York

Canadian Factory, Niagara Falls, Ont.

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GURNEY



WILL the year just starting put upon our industries still greater demands for production?

Will it drive them to still greater output at any or all costs?

Or put an end to the times of plenty in an unprecedented avalanche of competition upon the markets of the world and force our factories to the employment of every known economic resource?

Be it the one or the other — output or economy — the answer in either case is the same —

Gurney Ball Bearings.

Gurney Ball Bearings for increased output.

Gurney Ball Bearings for greater economy.

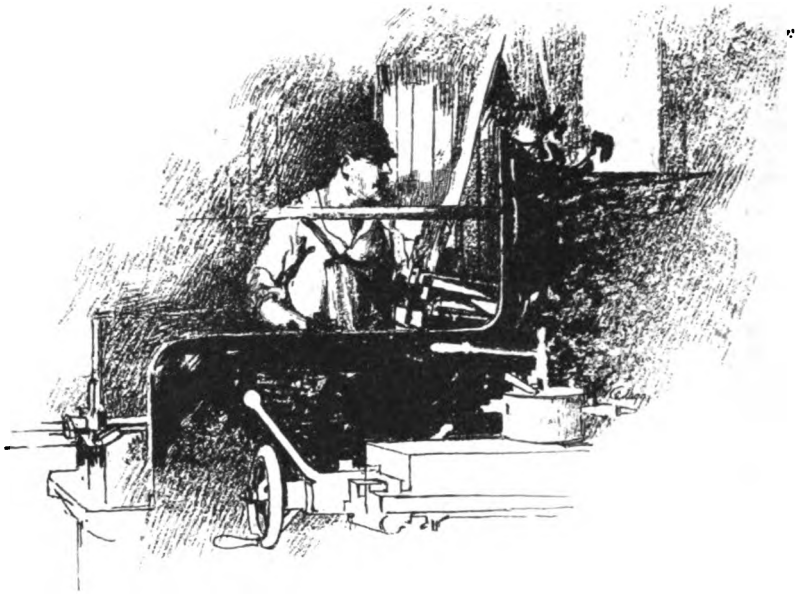
And this is true throughout the industrial world — whether applied to the factories themselves, or to their products.

Wherever friction is to be overcome, Gurney Ball Bearings offer the most efficient solution to the problem of its overcoming.

GURNEY BALL BEARING COMPANY, Jamestown, N. Y.

Chicago, Ill. Conrad Patent Licensee **New York City**

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BROWN-LIPE

THE REASON FOR THE use of Brown-Lipe Transmissions and Differentials by such a large majority of leading Pleasure Car and Truck Manufacturers is not found in any one thing.

IT IS NOT ONLY BECAUSE OF THE UNEXAMPLED accuracy of Brown-Lipe workmanship, not because of our using only the finest steel, nor the unequalled completeness and modernity of our factory equipment; neither is it only because of the extraordinarily helpful *additional* safeguards to longevity and perfect performance that are included in all Brown-Lipe products.

IT IS THE SUM OF THESE THINGS, the surpassing thoroughness, the bottom-deep and brimful quality of every single, individual, Brown-Lipe job, that has elevated Brown-Lipe Transmissions and Differentials to their present commanding position in the Industry.

AND THIS MAN—as well as every one of his fellows—knows this, and realizes that Brown-Lipe products must continue to approach as near to absolute perfection as human limitations permit.

BROWN-LIPE GEAR CO.

SYRACUSE Transmissions NEW YORK

BROWN-LIPE CHAPIN CO.

Differentials

New York: Thos. J. Wetzel, 29 W. 42d St.
San Francisco: A. H. Coates, 444 Market St.
Chicago: K. Franklin Peterson, 122 S. Michigan Ave.
Detroit: L. D. Bolton, 2215 Dime Savings Bank Bldg.
Foreign Agent: Benjamin Whittaker, 2 Norfolk Street, Strand, London, W. C.

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Three Layers of Rubber and Backed with Khaki—No Air Leakage

This "Rie-Nie" Auto-Patch is the greatest seller ever because it has an instant appeal to the motorist just as soon as you tell him its *logical* and *exclusive* advantages and then call his attention to the fact that the price is no higher than that of any auto patch.

It's made with a layer of the best *cured* rubber between two layers of *raw* rubber and backed by a khaki fabric—no porosity possible. The patch is as air-tight as the tube itself and it lists at

Small size (36 square inches) . . 50c
Large size (108 square inches) . $1.00



1 Tablespoonful of German Radiator Compound Does the Work

Stops the leak permanently—no need to use half or all the can—*one can of German Radiator Compound is enough for 20 leaks.*

Your customers will appreciate this as a good investment just as soon as they see it. More than that, you can appreciate its selling possibilities when we tell you that this 50c size is the same can that we formerly sold for 75c—a reduction to satisfy the demand of our dealers for a lower priced package.

Now 50c

Check what you need at once in "Rie-Nie" Products on the list of items in the corner. Don't take any chances of running out of a good seller. *Remember the goods will be billed by your jobber.* Do this at once.

DURKEE-ATWOOD CO., Minneapolis, Minn.

When you carry a stock of "Rie-Nie" Products on your shelves you are doing two things:

1. You guarantee your customers their full money's worth.

2. You insure yourself against losses from dead stock that won't move.

"Rie-Nie" Products are made to meet a demand. We know what the public requires. Our knowledge is a business asset to you—makes you able to order with confidence. Get into the happy family of "Rie-Nie" Dealers.

M. W. 2
Durkee-Atwood Co., Minneapolis, Minn.

Please instruct my jobber .....

... .of.....

to ship me the noted amounts of the items checked. It is understood he is to bill me for them and I am to pay him as per our usual terms and subject to my regular dealer discount.

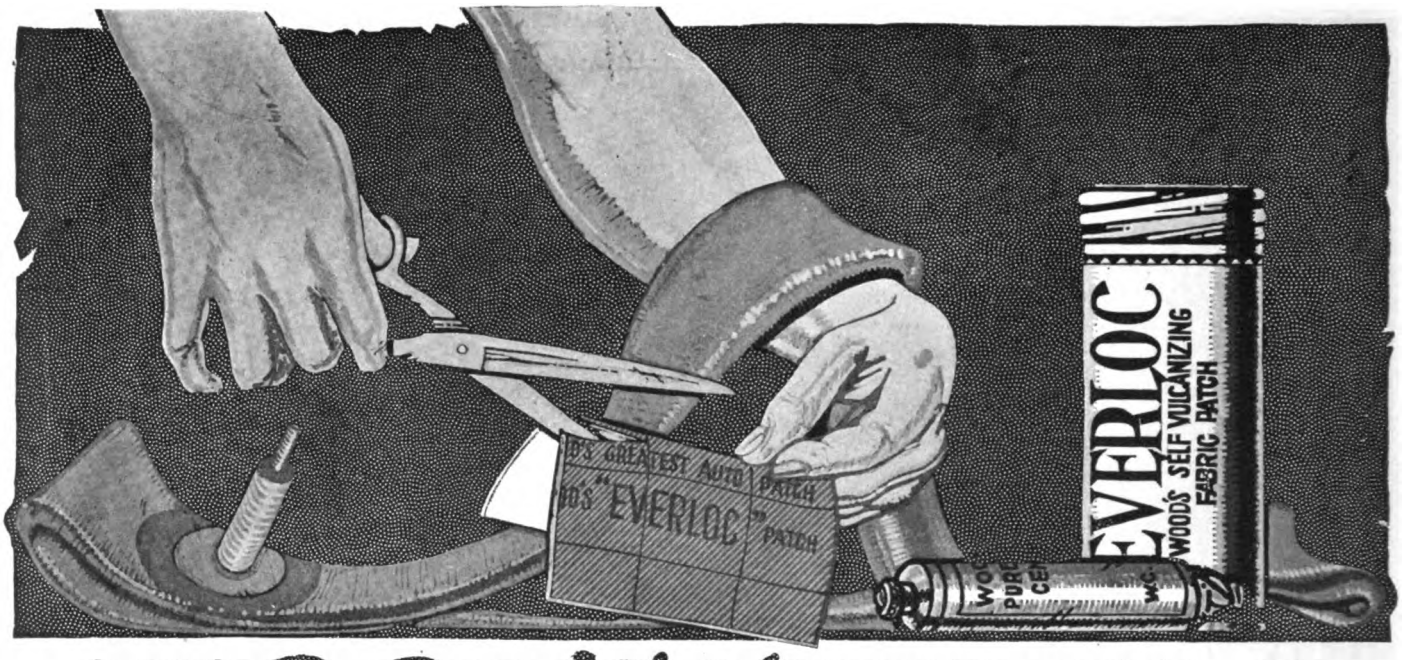
....doz. German Radiator Compound ..... @	$ 6.00	per doz.
.... " Auto Patch (Small 36 Sq. In.) ..... @	6.00	" "
.... " Auto Patch (Large 108 Sq. In.) ..... @	12.00	" "
....Valve Grinding Compound, Duplex can ..... @	3.00	" "
....Shop size (One Grade, Fine, Course, or Medium @	6.00	" "
....½ Pts. All In One Black Dressing..... @	.40	each
....Doz. Hand Soap, one pound cans ..... @	1.20	per doz.
....½ Pts. Air Drying Black Enamel..... @	.40	each
....Pts. Mohair Dressing and Waterproofing ..... @	.75	"
....One pint Clutch and Brake Comp. (Spec. Oilers) @	.35	"
....½ Pts. Cylinder Enamel @	.40	"
....½ Pts. Rie-Nie Re-Nu (Cleaner and Wax Polisher combined) . @	.25	"
....Fine Parts Oil (Special Oilers) ..... @	.25	"

Name.....

Address .....

City..... State.....

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WOOD'S EVERLOC TIRE PATCH

Just Cut the Amount You Need

WITHOUT heat, tools or experience, you, or any motorist, whether out on the road, or in the garage, in 5 minutes can permanently repair any puncture or blowout up to 17 inches in length with Wood's Everloc Tire Patch.

Just measure the size of your puncture or blowout and cut the exact amount of Everloc you need. Everloc makes a permanent bond from the minute it touches your tube. The longer it's there, the tighter it stays until finally it becomes part of the tube itself.

Everloc is the economical patch as well as the easily applied one, for Everloc doesn't dry up in 10 years. Because Everloc is made of Pure Para Rubber, the older it is, the greater its sticking strength. Everloc makes tube repairs in 1-20 the time and at 1-20 the cost of ordinary vulcanizing.

The Original Self-Vulcanizing Tire Patch

Everloc is the original self-vulcanizing cold patch. Air pressure from within and road pressure from without, vulcanize it into a piece of the tube itself. The hotter the road, the tighter Everloc holds. Everloc is guaranteed never to leak or creep regardless of the size patch.

Everloc is the tire patch that is built on a base of genuine U. S. Khaki. This gives it its tensile strength. Over this, a layer of cured rubber is pressed, making it airproof, and forming the base for the Pure Para Rubber sticking surface of Everloc.

700,000 practical motorists depend on Everloc for quick permanent repairing of all punctures and blowouts. Try it yourself. Carry Everloc with you instead of extra inner tubes. If your dealer isn't supplied, send us his name. Write us today for a free sample strip of Everloc and test its strength and quality yourself.

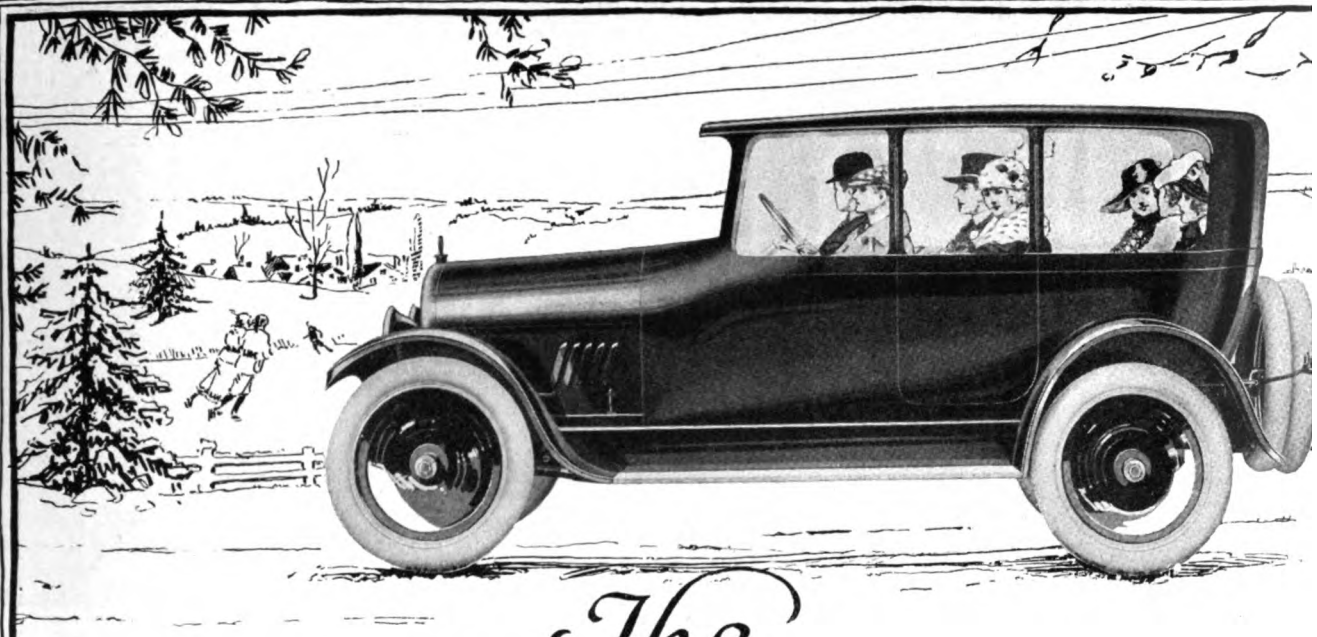
In Sheets: $6\frac{1}{2}$x$18\frac{1}{2}$ inches $1.50; 4x18 inches $1.00; 2x$16\frac{1}{2}$ inches 50c

W. C. WOOD COMPANY, 40 NORTH TENTH STREET MINNEAPOLIS, MINNESOTA

We make a special sheet 20x28 inches for garage use

When writing advertisers please mention Motor World

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The Westcott SEDAN

The Car that Gives You More

MORE leg room, more head room, wider aisle between front seats, completely telescoping windows, sloping wind-shield, indirect lighting, greater refinement in details and a degree of luxury that you had not thought possible in any motor car.

The cushions are deep, luxurious masses of nappy, all-wool fabric woven exclusively for the Westcott-Springfield Sedans.

Beneath all this body comfort is the incomparable Westcott Chassis, deliberately built to deliver service that few can equal and none can surpass.

125-inch Wheel Base; Vanadium Springs; Westcott-Continental Motor, 6 cylinder, 3½x5½; Delco Two Unit Electrical System; Timken Axles and Bearings; Extra Heavy Transmission; Dry Plate Multiple Disc Clutch; Tubular Shaft Drive with two Spicer Universal Joints; Torque Arm; Rayfield Carburetor; Fedders Radiator; Thermostatic Control of Engine Temperature; Adjustable Pedals and Steering wheel.

5 Passenger Sedan $2090
7 Passenger Sedan $2190
4 Passenger Roadster or 5 Passenger Touring Car $1590
7 Passenger Touring Car $1690

f. o. b. Springfield, Ohio

THE WESTCOTT MOTOR CAR COMPANY

SPRINGFIELD, OHIO

At the New York and Chicago Shows

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DIXIE 20TH CENTURY MAGNETO

The Plug with the Green Jacket



Lighting and Starting Systems

AMMETERS

Conscientious manufacture and comprehensive service are prevailing characteristics of the Giant line of

SPLITDORF DEVICES

If you've the motor we've the RIGHT ignition for it

SPLITDORF ELECTRICAL COMPANY
NEWARK, NEW JERSEY

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Folds to Fit Any Tool Box

A Woman Can Work it with One Hand

Over 100,000 Sold and Every Buyer a Booster

Clamps On Running Board—Piston Never Loses Compression

YANKEE Pump

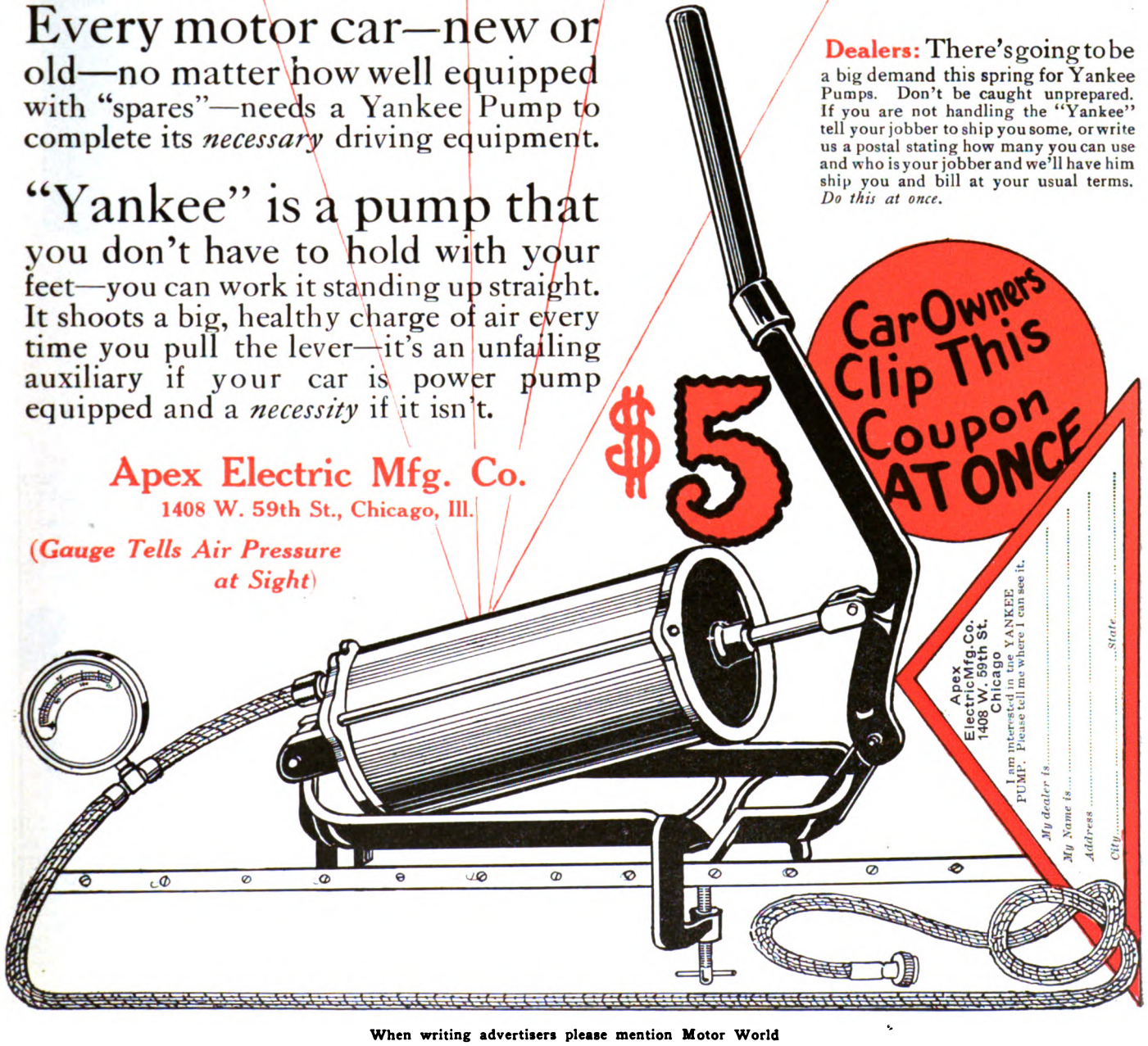
Every motor car—new or old—no matter how well equipped with "spares"—needs a Yankee Pump to complete its *necessary* driving equipment.

"Yankee" is a pump that you don't have to hold with your feet—you can work it standing up straight. It shoots a big, healthy charge of air every time you pull the lever—it's an unfailing auxiliary if your car is power pump equipped and a *necessity* if it isn't.

Apex Electric Mfg. Co.
1408 W. 59th St., Chicago, Ill.

(Gauge Tells Air Pressure at Sight)

Dealers: There's going to be a big demand this spring for Yankee Pumps. Don't be caught unprepared. If you are not handling the "Yankee" tell your jobber to ship you some, or write us a postal stating how many you can use and who is your jobber and we'll have him ship you and bill at your usual terms. *Do this at once.*



$5

Car Owners Clip This Coupon AT ONCE

Apex Electric Mfg. Co.
1408 W. 59th St.
Chicago

I am interested in the YANKEE PUMP. Please tell me where I can see it.

My dealer is.....

My Name is.....

Address.....

City..... State.....

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THE NATIONAL AUTO SHOWS

Under Auspices of National **Automobile** Chamber of Commerce, **Inc.**

At CHICAGO

Coliseum

and

1st Regiment Armory

January 27 to February 3

Passenger Vehicles—Parts Accessories

S. A. MILES, Manager **Auditorium Hotel, Chicago**

The Usual Courtesies to Visiting Dealers

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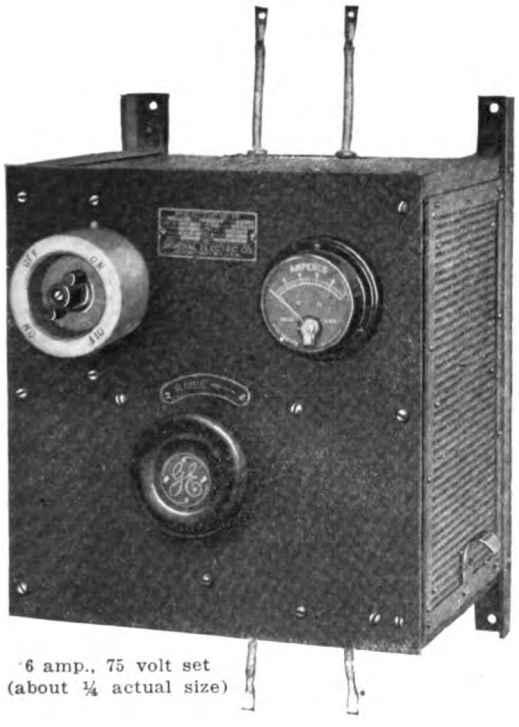
a new battery charger for alternating current

Three Sizes

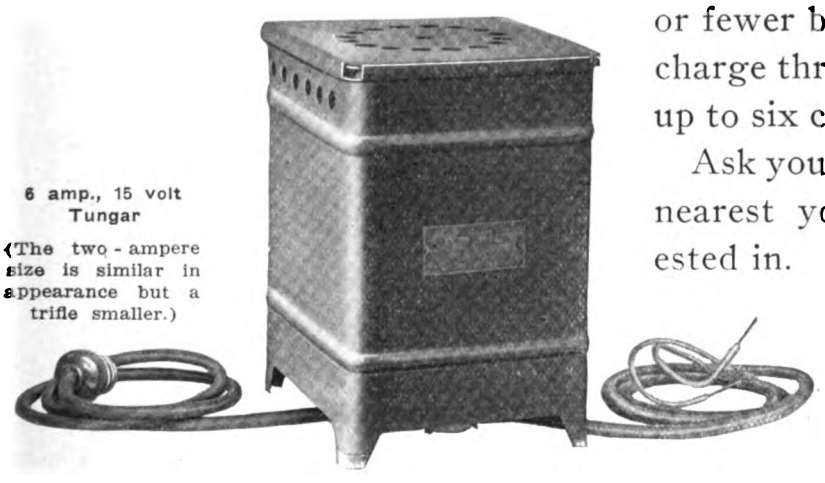
6 amp. 75 volts
for the public garage

6 amp. 15 volts
for the private garage

2 amp. 7.5 volts
for small lighting or ignition batteries



6 amp., 75 volt set
(about ¼ actual size)



6 amp., 15 volt Tungar

(The two-ampere size is similar in appearance but a trifle smaller.)

The new 6-amp., 75-volt G-E Tungar Rectifier is low in price and high in efficiency. It is a practical device for public garage or service station.

It will charge from three to thirty cells or ten 3-cell starting and lighting batteries at from one to six amperes.

This rectifier is self-starting and batteries cannot discharge through it should the A.C. supply fail. Batteries may thus be safely charged overnight unattended.

There are also two smaller sizes of the Tungar Rectifier, designed for private garages or fewer batteries. The two-ampere size will charge three cells and the six-ampere, 15-volt, up to six cells.

Ask your jobber or write the G-E sales office nearest you for the booklet you are interested in.

B-3412 covers the large Tungar
B-3411 covers the 6 amp., 15 volts
B-3407 covers the 2 amp. size

General Electric Company

General Office: Schenectady, N.Y.

ADDRESS NEAREST CITY

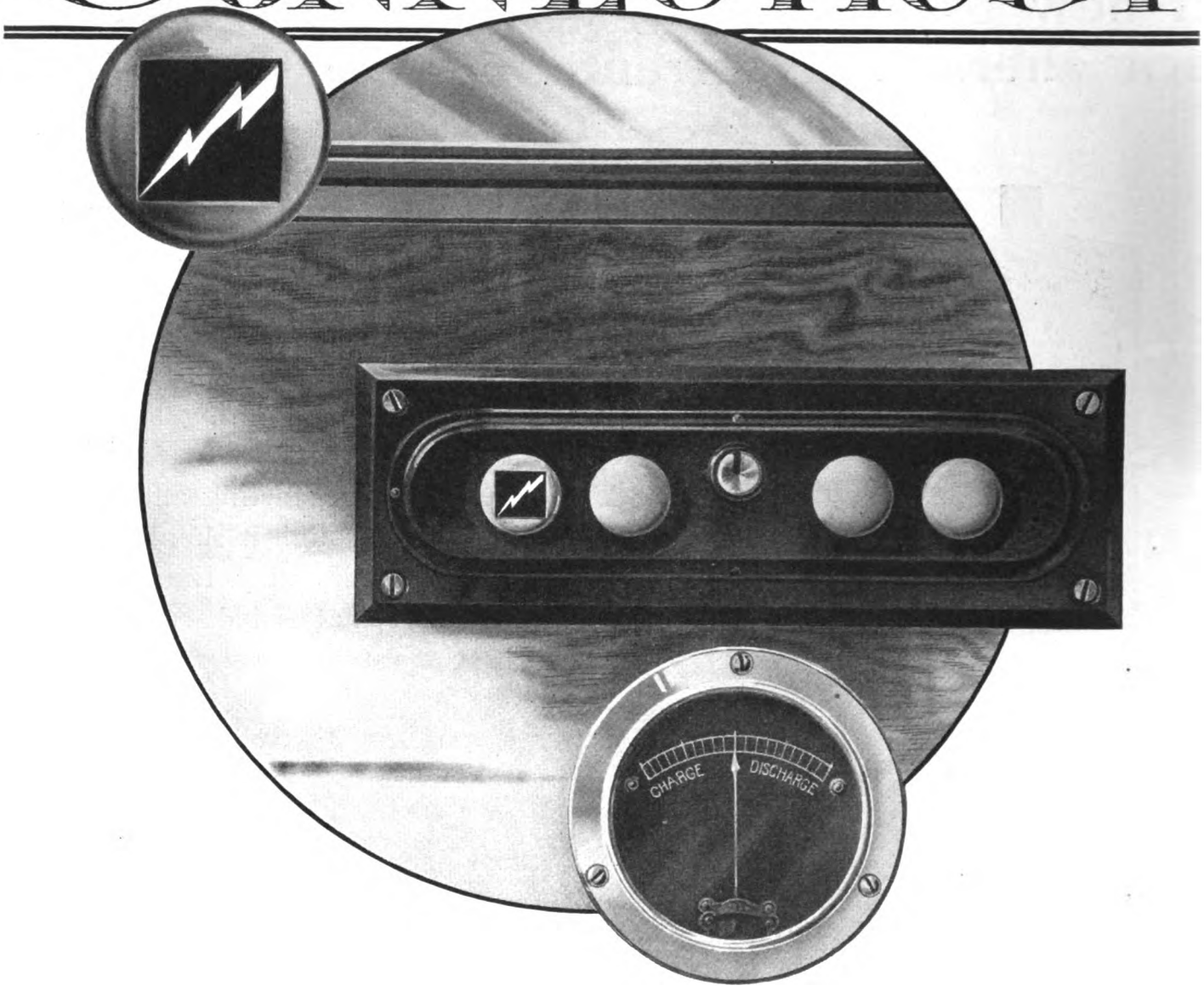
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*Southwest General Electric Company †General Electric Company of Michigan.
For CANADIAN BUSINESS refer to Canadian General Electric Company, Ltd., Toronto, Ont.
GENERAL FOREIGN SALES OFFICES, Schenectady, N. Y.; 30 Church St., New York City; 83 Cannon St., London, E. C., England. 6734

When writing advertisers please mention Motor World

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CONNECTICUT AUTOMATIC IGNITION



Practical Economy

Ordinarily it takes more current to start a motor than to supply the ignition for the whole day.

Excessive spinning of the motor not only wastes a lot of current but is liable to drain the battery.

A hot spark would relieve the battery of much of the burden of starting, and save a lot of current.

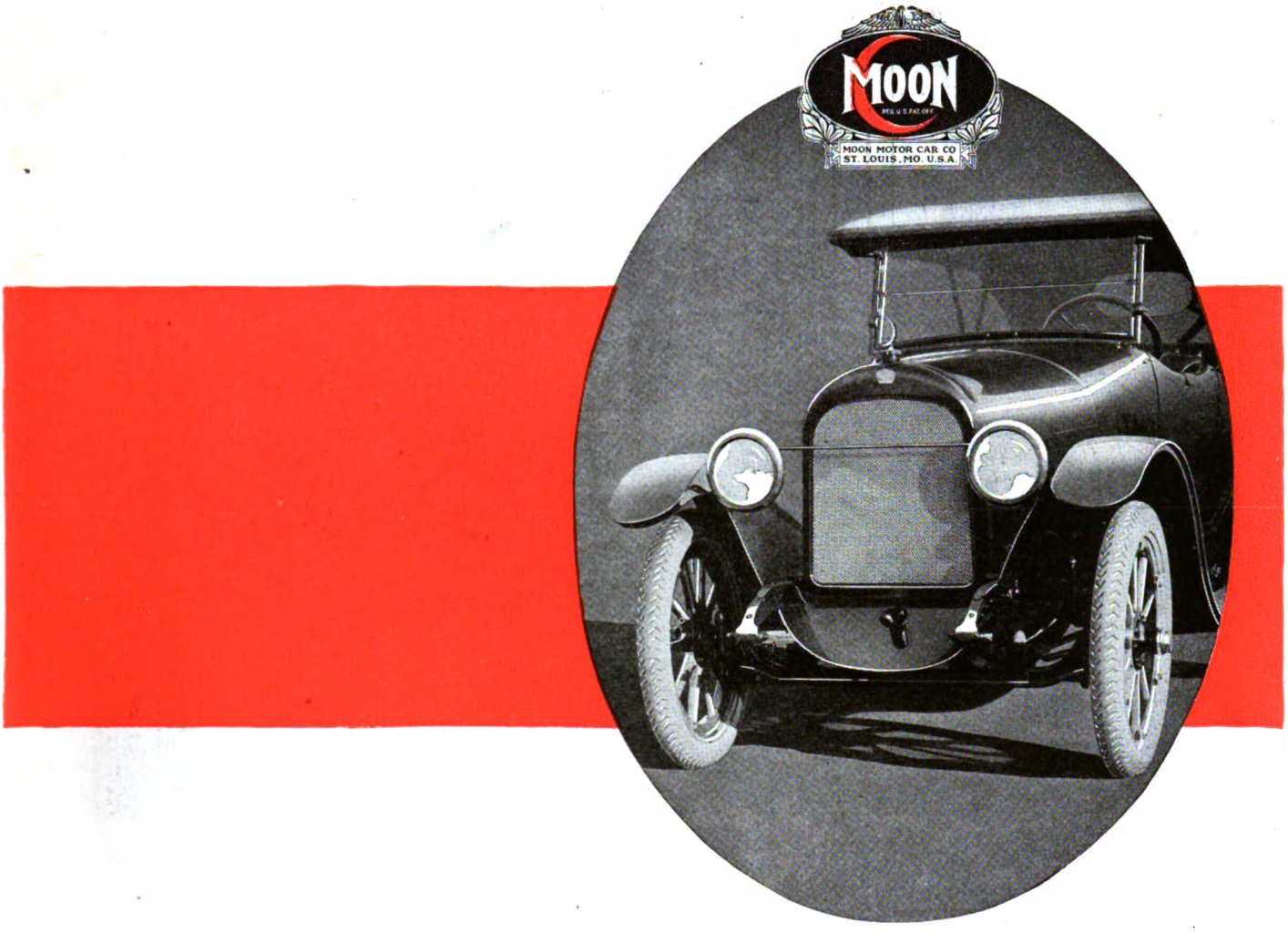
Connecticut Automatic Ignition delivers its hottest spark for starting and by so doing effects economy of the right kind—when it does the most good, and at no sacrifice of efficiency.

The Automatic Switch makes such design possible.

The device shown above identifies this switch and marks the cars equipped with Connecticut Automatic Ignition. This is the "Device of Efficiency."

CONNECTICUT TELEPHONE & ELECTRIC COMPANY
Meriden Conn.

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ON the boulevard—in the park—along city streets or country roads —Moon Cars more than "hold their own" in size, comfort, beauty of line, speed, and ease of operation. That's why Moon Cars will suit you down to the ground. Distinctive and individual in design, they look and act twice the price. The motor—Continental-Moon—is powerful, smooth-running, splendidly constructed. Top-notch materials, workmanship and finish make every unit worthy of featuring. Big and roomy—long wheel base. Upholstered in genuine tan Spanish Leather without extra charge. Note the smart tilt to the windshield—and the graceful lines throughout. Then—see the Moon Cars, and make one *yours*.

Six-66 Touring $1690	*Six-66 Roadster* $1690	*Six-66 Cabriolet* $2250	*Six-66 Coupe* $2250
Six-43 Touring $1295	*Six-43 Roadster* $1295	*Six-43 Cabriolet* $1950	*Six-66 Sedan* $2350

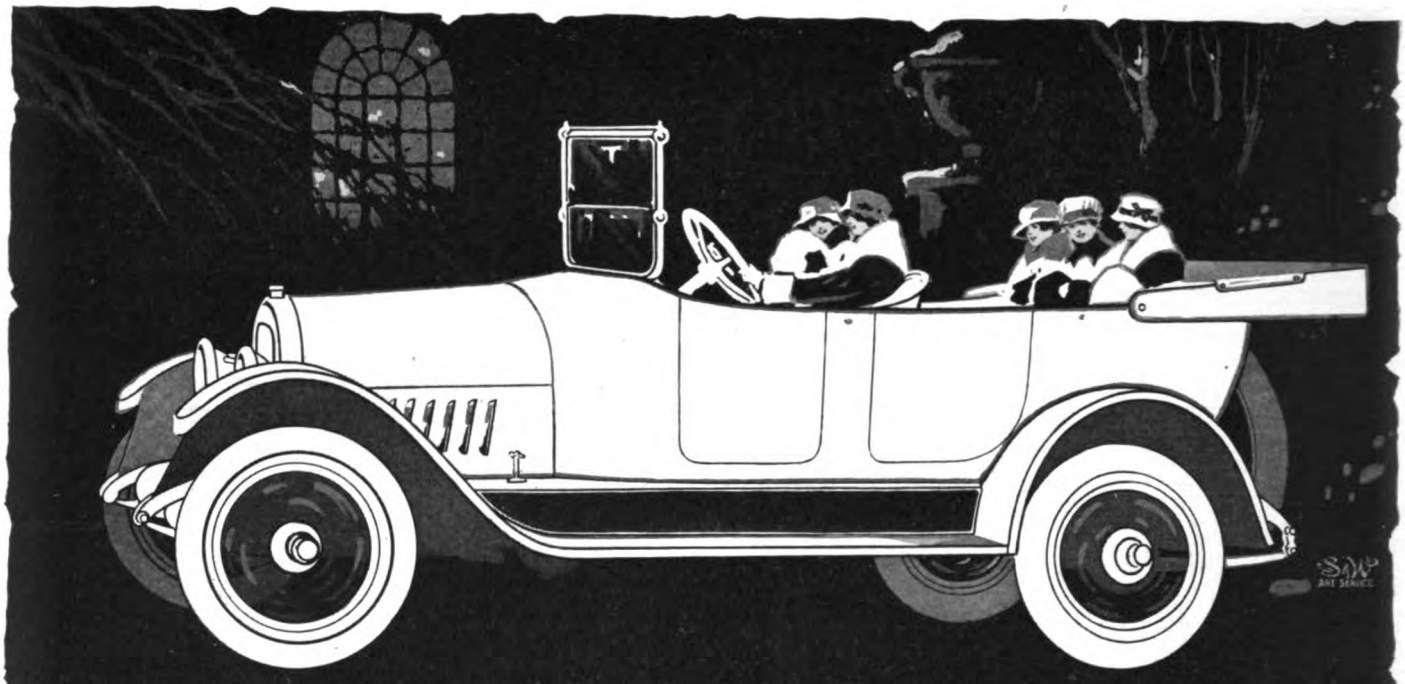
—all fully equipped

See the complete Moon line at the Chicago Automobile Show

Write for illustrated literature
MOON MOTOR CAR COMPANY
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STEPHENS SIX

"Best By Test"

Proud Heir to a Half Century of Experience

Thirty years before the first horseless carriage was hailed with hoots of derision the character of the Stephens Six was molded.

America had not yet ceased to rejoice over the peace of Appomattox or to mourn the world loss of Abraham Lincoln when in 1866 the Moline Plow Company, the company that builds the Stephens Six, was organized, little realizing then that one of its destinies was the manufacture of automobiles.

Year after year dropped into the bottomless abyss of Time. Experience, a priceless thing, was bred; prestige, equally as priceless, was established.

And finally came the motor car and the age of gasoline.

A New Machine of Old Ideals

Above all else, the Stephens Six is substantial.

The experience of more than half a century guided the hands that designed the car and constructed the parts and assembled them.

Steel is not the only symbol of sturdiness in an automobile. **The reputation of the maker also gives it stamina.**

And, again, the Stephens Six was built to uphold the prestige that the Moline Plow Company has gained in fifty-one years of endeavor in the manufacturing world. Such prestige is too valuable to be made the stake of a gamble. The Stephens Six does not represent the throw of the promoter's dice box; it is an achievement carefully planned and skillfully constructed to perpetuate a reputation for quality and value that only years of labor, under the spur of high ideals, can bring.

Our handsome 1917 models will be exhibited at the Chicago Automobile Show in Booth No. 13 of the Coliseum basement. You are cordially invited to look us over while at the show and learn why the Stephens Six is in a class by itself and offers greater value than any other motor car.

STEPHENS MOTOR

MOLINE Branch of Moline Plow Company **ILLINOIS**

Two Models, Each $1150
Five-Passenger Touring Car
Three-Passenger Roadster

Dealers will find the Stephens Six a trade magnet worthy of consideration. Write for territory.

STEPHENS MOTOR
Branch of Moline Plow Co.
MOLINE, ILLINOIS

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JOBBERS

VISIT OUR EXHIBIT DURING CHICAGO SHOW

Congress Hotel, Room 1128

1917 Complete Line of Specialties for Ford Cars

Sold Through TRADE APCO MARK **Jobbers Only**

Rear View Mirror, 5½ in., $1.
Special Tow Chain, complete in bag, weighing 4½ lbs., $2.50.
New Unbreakable Oil Gauge with cork float, 50c.
Complete Valve Grinding Outfit, 60c.
Steering Rod Anti-Rattlers, Screw Adjusted, 15c each.
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Steering Column Brace, 50c.
Oil Gauge, 30c each.
Door Anti-Rattlers, 10c each.
Valve Stem Adjusters, 20c set.
Front Number Holders, 12c pair.
Tail Light Bracket, 50c each.
Brake Rod Supports, 30c set.
Bow Clamps, 50c set.
Cotter Pin Assortment, 20c box.
Robe Rails, 50c each.
Emergency Brake Handle Release, 50c each.
Rubber Pedal Pads, 50c set.
Breather Pipe and Oil Filler, 50c.
Spindle Arm Silencer, 35c set.
Headlight Brace, 50c each.
Cylinder Water Connections, 30c each.
Clutch Control, 30c.
Spark and Throttle Lock, 60c each.
Valve Grinder, 25c each.
Valve Spring Remover and Replacer, 25c each.
Valve Grinding Compound, 25c can.
Emergency Brake Shoes, Lined, $1.00 set; Plain Iron, 60c set; Springs, 5c each.
Oak Running Boards, $7.50 set.
Transmission Lining, 70c set.
Fan Grease Cup Extension, 25c each.
Spring Leaf Lubricators, 30c per unit.
Valve Stem Packings, 50c set.
Rear Axle Truss, $1.50 each.
Running Board Truss, $2.00 set.
Starting Crank Holder, 20c each.
Muffler Cut-Out, 60c; Pedal Only, 25c.
Windshield Brace, $1.00 pair.
Steering Wheel Puller, 50c each.
Running Board Tire Holders, $2.40 set.
Detachable Fan Belt, 40c each.
Fan Belt Retainer, 15c each.
Front Axle Brace, $1.00 each.
Steering Column Brace, $1.00 each.
Heavy Starting Crank Holder, 50c.

Dealers' discount in Standard Packages 33⅓%
Broken Packages 25%

All APCO goods are packed in attractive packages, and command the re-sale prices because the Ford owner knows that they are right.

We are the largest exclusive makers of accessories in the country for the Ford Car.

AUTO PARTS COMPANY

BLACKSTONE ST. PROVIDENCE, R. I.

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Notice of Price Advance!

Because of greatly increased cost of materials and labor it is necessary to advance the net price of Motor World's simplified System of Accounting to $15.00. Present price is $12.00.

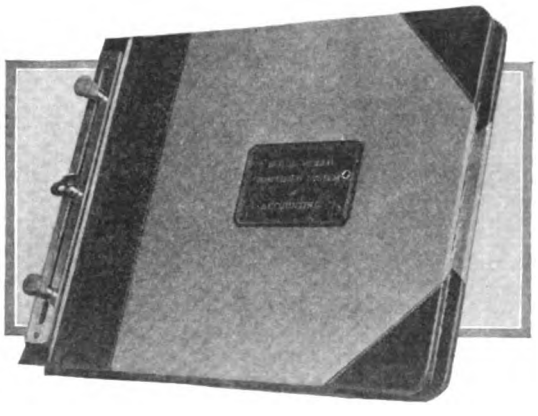
New price will become effective on all orders placed on and after April 1st, 1917.

Order Now and Save 25 Per Cent

Every dealer and garage owner who is operating without a complete and accurate system of accounting owes it to himself—to his very best business interests, to reform his methods and get started on the right track.

Already more than 1500 of these simplified systems are in successful operation in as many dealer and garage establishments throughout the United States. Hundreds of letters are on file from dealers and garage owners who commend Motor World for having developed this wonderful simplified accounting system.

If your business is being conducted in a systemless manner we urge you to get started on the right course NOW. Take advantage of the present low price. Get your order on file now—before the price is advanced twenty-five per cent.



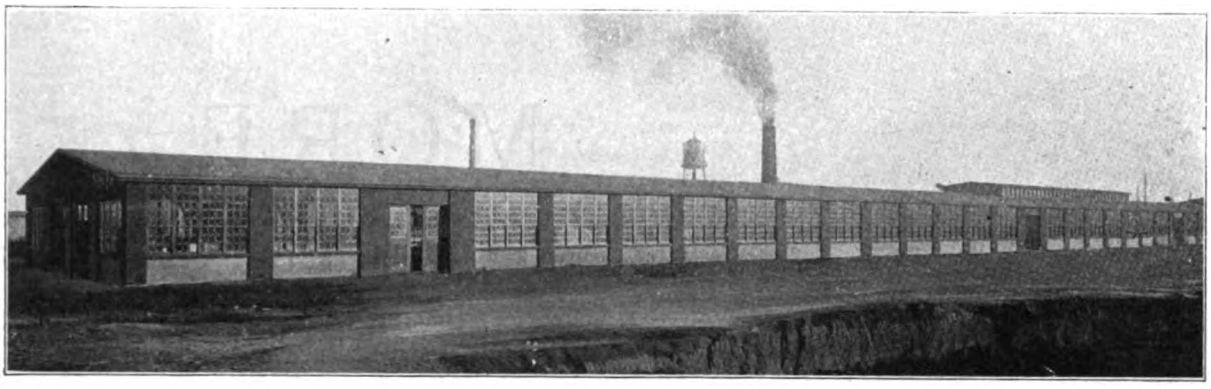
The entire system is contained in one loose leaf binder — everything in one book, including an index set and 400 "Income," "Expense" and "Accounts Receivable" sheets. Also included is a 36-page book which describes the operation of the system in detail. Instructions are written so that you grasp every detail even tho you never had bookkeeping experience or training.

Order now—don't put it off a single day. Remit by check or money order. Address:

MOTOR WORLD
FOR DEALERS, JOBBERS AND GARAGEMEN

239 West 39th St., New York City

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GROWTH

FACTORIES grow when the demand for their product grows. The Lexington shops at Connersville, Ind., have recently been doubled in size because the demand for the LEXINGTON Minute Man Six made it necessary. The added capacity means larger production, better service to dealers, and a better car.

It indicates also the conviction of LEXINGTON'S makers that the future of a car of LEXINGTON quality backed by LEXINGTON facilities is unquestionably bright.

THE LEXINGTON-HOWARD CO.
1950 Columbia Avenue Connersville, Ind., U.S.A.



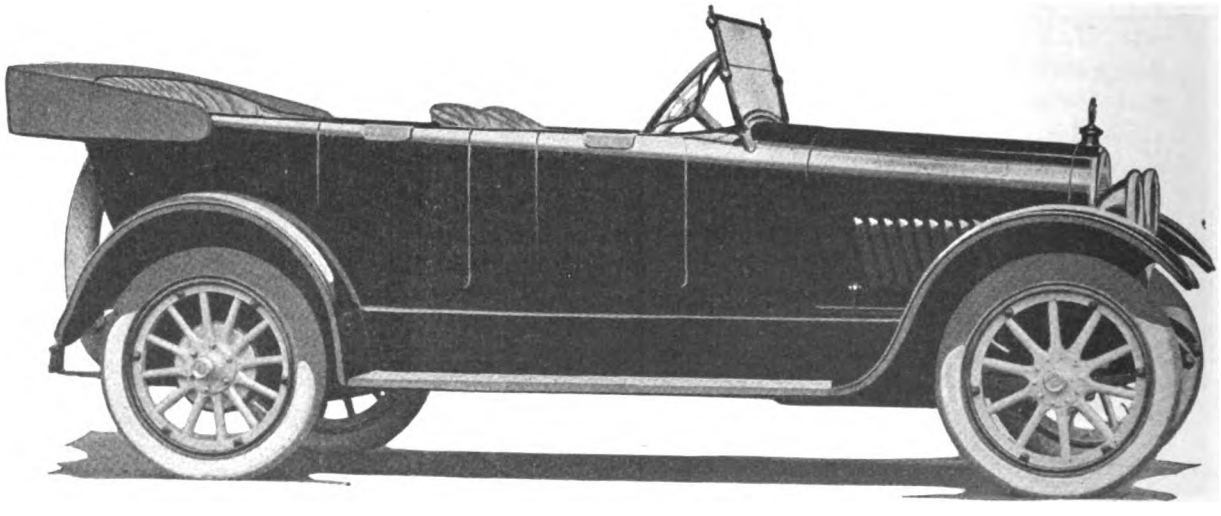
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MORE---

has always been the LEXINGTON ideal, more quality than the buyer expects, more care than is absolutely necessary, more thought than simply enough to keep things running smoothly.

The Moore Multiple Exhaust System which gives 22.8% more power from less gasoline, the cut steel starting gear on the flywheel which costs us over $20,000 more this season than a cast gear which buyers would accept just as quickly, the patented mounting for head-lamps, the Moto-Meter, and a dozen other details are all examples of this "more" idea.

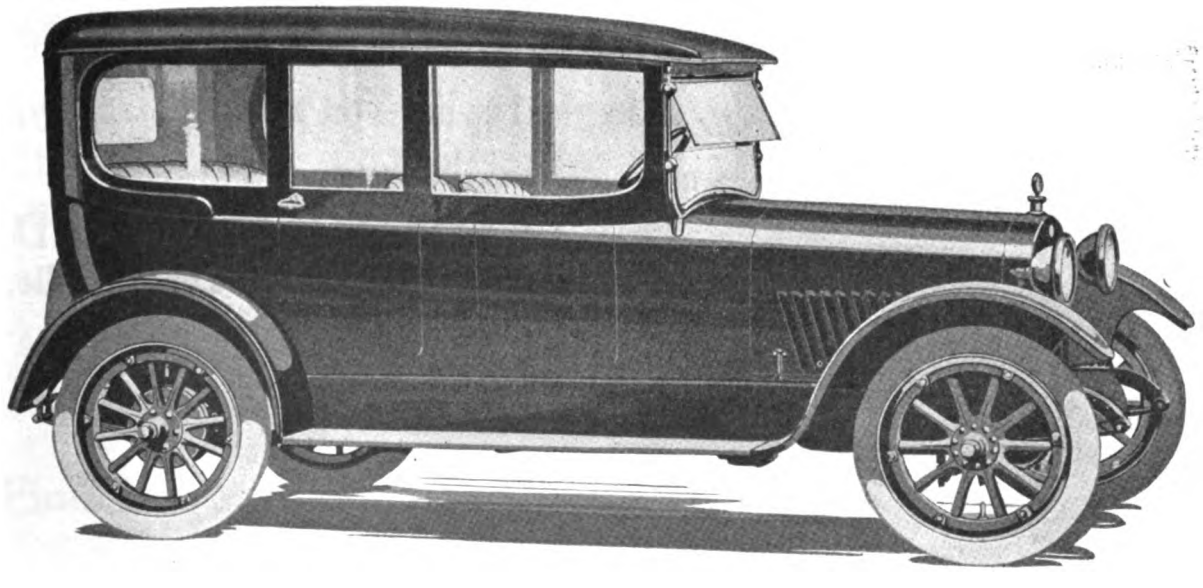


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STYLE---

is steadily gaining in importance as a factor in the sales of even popular priced cars. While this may be a discovery to some, it has always been a cardinal point in LEXINGTON policy. The LEXINGTON Minute Man Six has always been an astonishingly good looking stylish car and it is today one of the few cars at anywhere near its price, that are wholly satisfactory in this respect. The LEXINGTON sells because it satisfies the eye first—and in service no less.





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DEALERS---

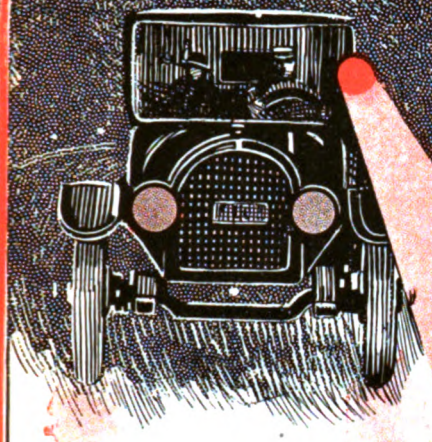
should see the LEXINGTON Minute Man Six at the Chicago show. At New York it was a continuing center of interest without any sensational effort to attract attention. Amid the many cars exhibited

LEXINGTON more than held its own, not by strenuous insistence upon notice, but the quiet power of quality.

See the LEXINGTON at Chicago and consider its sales possibilities in your territory. If you are unable to get to the show write—or wire—or visit the factory.

THE LEXINGTON-HOWARD CO.
1950 Columbia Avenue, Connersville, Ind.,
U. S. A.

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The Spotlight of the motoring world is on RAYFIELD CARBURETORS

There are more than 600 Rayfield Service Stations in principal cities and towns of the United States.



The Guarantee *is unconditional. The Rayfield must prove itself in every way a better carburetor than the one you have—and prove it to your satisfaction—if not, full purchase price will be returned. You have thirty days to decide.*

—and their performance:

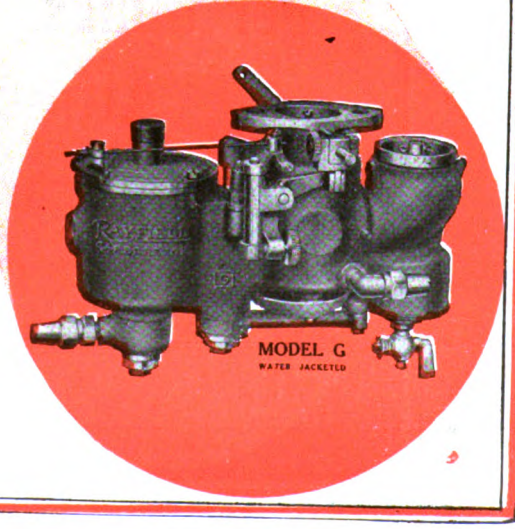
More flexible—greater range of power—save from 20 to 50 per cent in fuel. Quicker pick-up and starting—more power in climbing.

A better carburetor for better cars.

Special Exhibits at the Chicago Show at Coliseum and at Chicago Branch

1140 Michigan Ave.

Open house at both exhibits—you'll be welcome and interested.



Findeisen & Kropf Mfg. Company
2101 Rockwell Street, Chicago

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Chalmers $1090

The Chalmers Car and the Chalmers proposition is very attractive this year. Especially attractive to ambitious dealers. Dealers who want to grow.

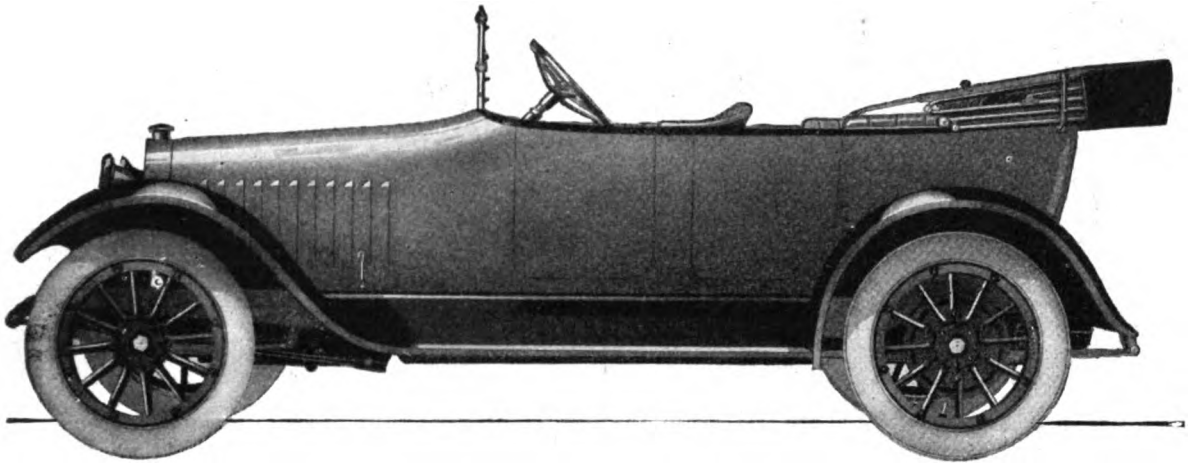
Attractive because Chalmers is a big and strong organization; building 30,000 cars for next season; aiming at even bigger things.

Attractive because the Chalmers is a popular car at a popular price.

CHALMERS MOTOR CO. Detroit, Mich. U.S.A.

When writing advertisers please mention Motor World

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Attractive because the Chalmers can be sold possibly to the greatest advantage in the rural sections.

Attractive because Chalmers this year offers a complete line of closed cars. A line including all the popular models.

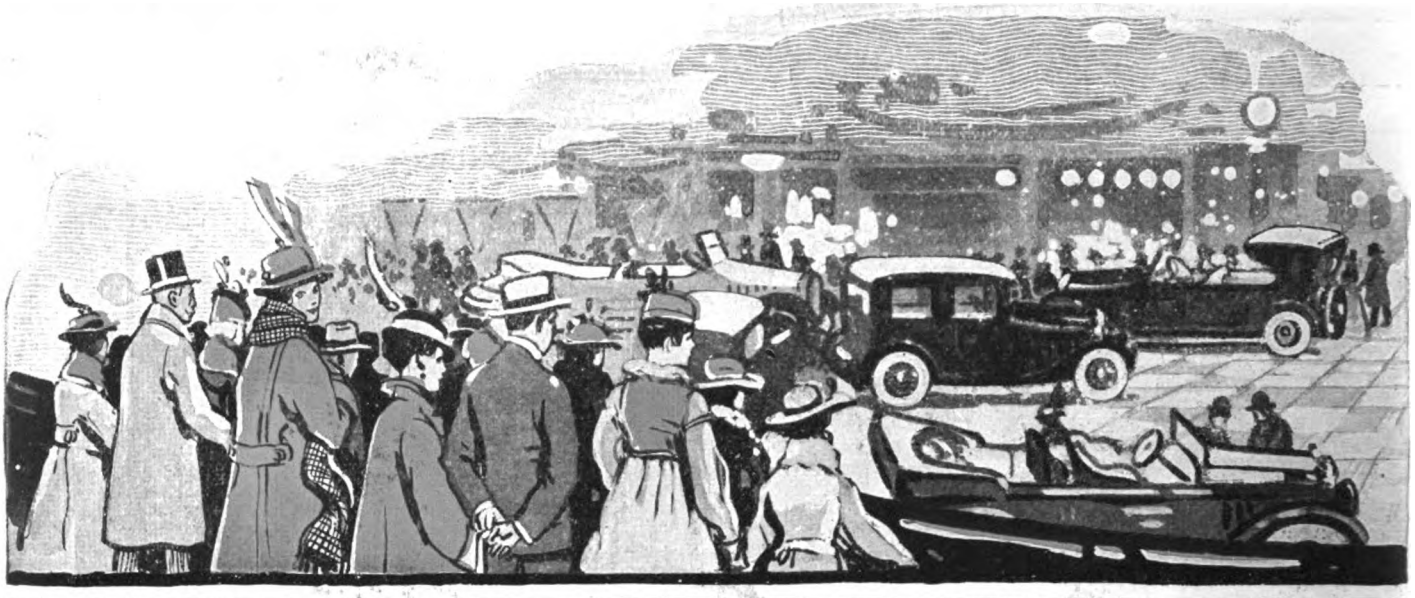
Present Prices

Five-passenger	Touring	-	$1090	Seven-passenger	Sedan	-	$1850
Seven "	"	-	1350	Seven "	Limousine	-	2550
Two "	Roadster	-	1070	Seven "	Town Car	-	2550

(All prices f.o.b. Detroit)

CHALMERS · MOTOR · CO
Detroit, Mich. U.S.A.

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JOHNS—

Displaying Johns-Manville Motor-Car Accessories

—a popular line with every jobber and dealer

The Products First, because each product, whether Brake Lining, Fire Extinguisher, or Speedometer, has been held to the most rigid factory standard as to material and workmanship. And the new refinements of design which each year brings to motor-car accessories will all be found in the Johns-Manville Line.

Sales Policy Second, through a sales policy of profit protection for all concerned. We will sell these accessories only to the legitimate trade, and only through recognized trade channels. To the dealer this means uniform discounts, generous and rigidly maintained regardless of size of order—quick turnovers and profitable margins without serious tie-up of capital. To the jobber it means dealer support and enthusiasm, backing up a standardized and quick-selling line of indispensable accessories.

Advertising Policy And third, through a broadly distributed consumer demand, developed by extensive and consistent national advertising, Johns-Manville will be a familiar name in the accessory field this year.

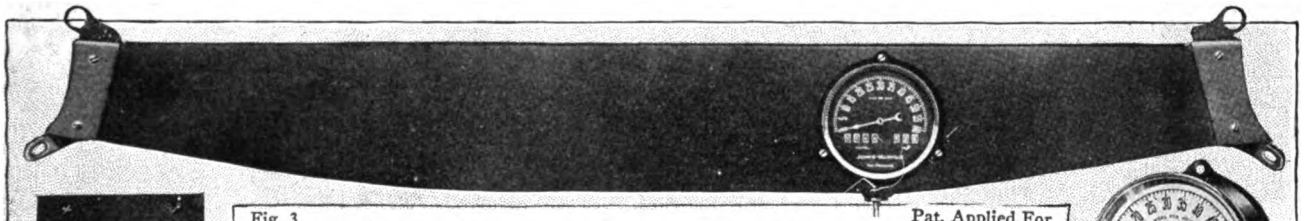
So study the items illustrated here—and in the interests of your own profit sheets, get complete details from the nearest Johns-Manville Branch.



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MANVILLE



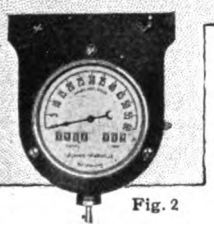


Fig. 2

Fig. 3

Pat. Applied For

Johns-Manville Speedometers for Ford Cars

Now being supplied in three types:—the Standard Dash Type (Fig. 1) Price $10.00. The Suspension Type (Fig. 2) Price $11.00, and the Combined Speedometer and Adjustable Instrument Board Type (Fig. 3) Price $11.25 Complete. All Johns-Manville Speedometers are built on the Centrifugal principle—simple in construction and accurate in operation.

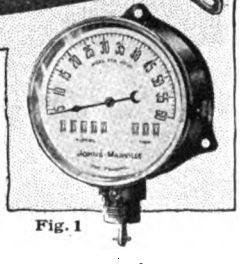


Fig. 1

J-M Fire Extinguisher

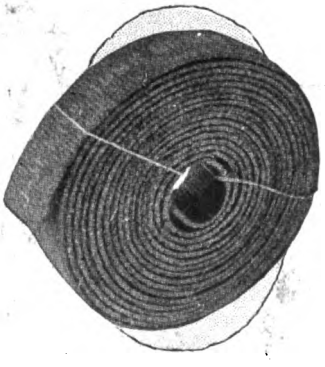
Works two ways—either by pumping while discharging, or by first pumping up air pressure and then discharging. Retails at $8, brass or nickel finish, bracket included.





J-M (Mezger) Soot-Proof Spark Plug

Soot-proof, leak-proof, heat-proof. Insures an intensely hot spark. Built in two units for easy disassembling. Price 75c.



J-M Non-Burn Asbestos Brake Lining

A safe, dependable and economical asbestos brake lining. By controlling the source of the raw material, Johns-Manville Asbestos, we are able to maintain the quality which assures its steady use by your trade.

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LECTROFLATER

ELECTRIC AIR PUMPS

A Complete Line—Filling All Needs—At Prices To Suit All Purses

AN ABSOLUTELY DEPENDABLE, scientifically constructed, powerful, self-contained unit, is every Lectroflater Air Pump.

It is no haphazard, heavy assembly of units. Each model is **specially designed and constructed** to fill the exact requirements of its field.

Extremely economical in operation, the Lectroflater is quicker acting and more generally efficient than any other pump of its size in the world. And its cooling and lubricating systems are absolutely without an equal. It does not overheat and is practically foolproof.

Light, Compact, Economical, And Wonderfully Efficient

Every Lectroflater is not only attractive in appearance, handy in shape and weight, but made of the finest materials in the most skillful manner.

Every one is thoroughly tested, and absolutely guaranteed to run continuously for hours and inflate to 125 lbs. pressure without overheating, and to pump only cool, clean air, "absolutely free from oil."

Big Advantages

Universal Motor; R & M Windings; Perfect Automatic Lubrication; Perfect Automatic Cooling; No Possible Chance for Oil to get into Tires; Working Parts Enclosed in Single Housing; Bronze Renewable Bearings; Uses Either Direct or Alternating Current.

High-pressure hose, quick-acting coupling, long electric cord, and attachment plug furnished with each Lectroflater.

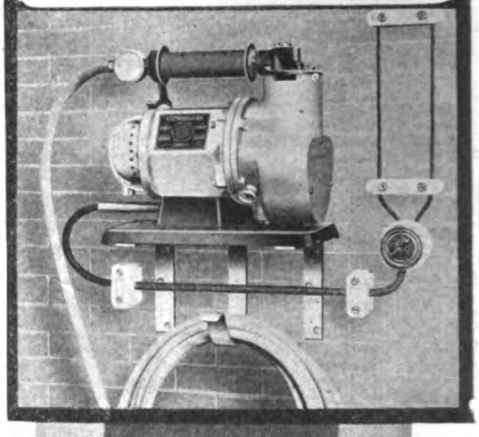


Lectroflater Curb Outfit. Extremely attractive and fully equipped, $160.

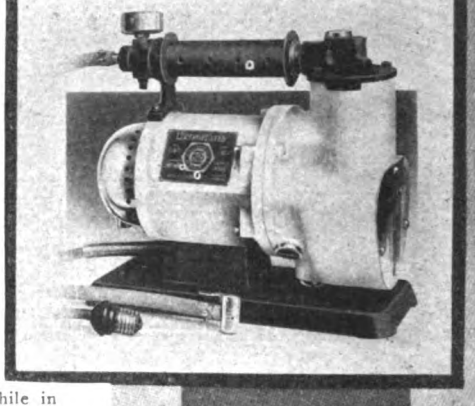
THE BLACK & DECKER MFG. CO.
109 S. Calvert St., Baltimore, Md., U. S. A.
Dist. for Canada, Northern Electric Company, Montreal.

District Representatives wanted. Attractive Proposition. Write.

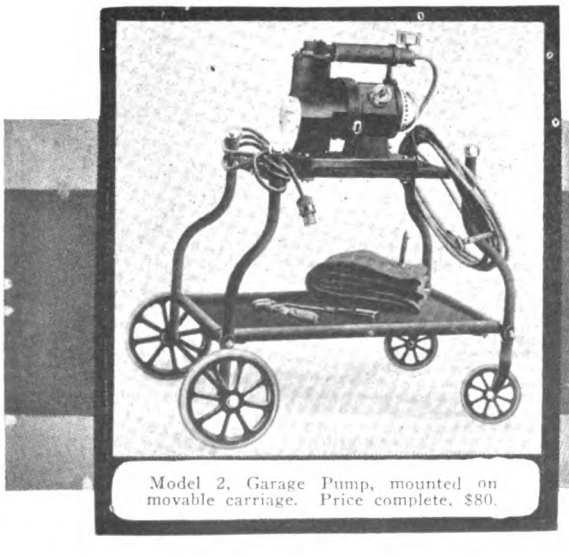
Model 2, Garage Pump, with wall mountings, bigger and quicker acting than No. 1. Price complete, $65.



Model 1, for small or private garages, complete $45.

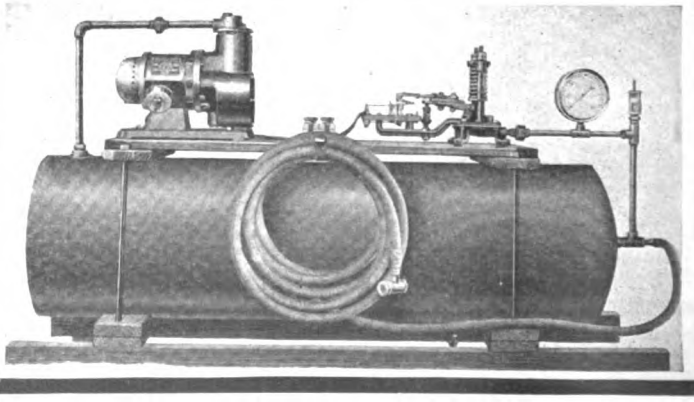


See our exhibit of pumps while in Chicago for the Show at 1512 S. Michigan Ave. W. F. Meyer, Mgr.



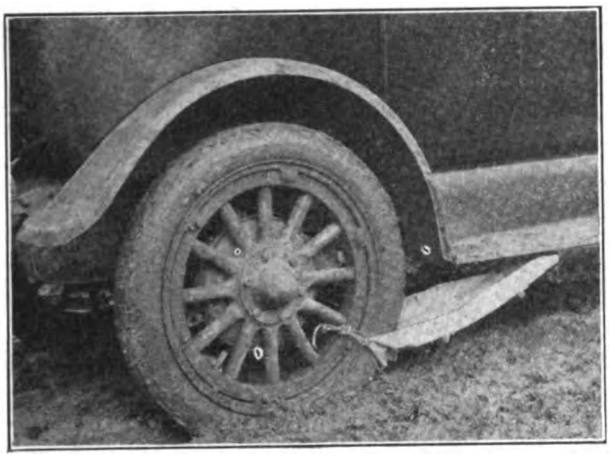
Model 2, Garage Pump, mounted on movable carriage. Price complete, $80.

Model 2, mounted on storage tank, complete with automatic switch, pressure gauge, heavy-duty hose, wired and piped, $125.



Digitized by Google

This Way Out

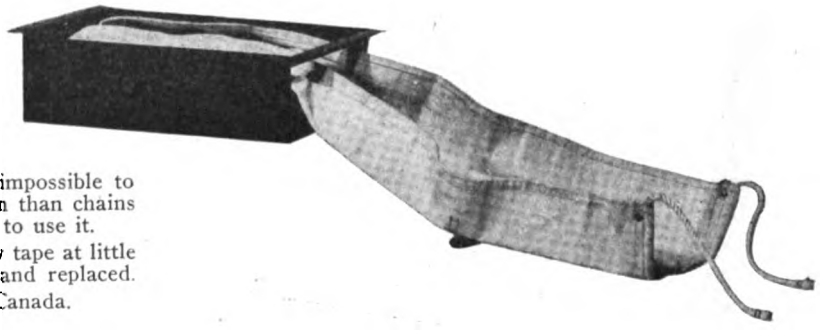


When you are in the mud with your rear wheels spinning, what would you give to get a tire hold on the road? More than the HABERSTICK will cost you. It usually costs you much more if you add time wasted and clothes spoiled to wear and tear on tires and engine—even if you don't have to pay to be pulled out by a team of horses.

The Haberstick costs you only six dollars. It is carried in your tool box when not in use. The Haberstick itself is a strip of heavy duck of sufficient length to go clear around a tire with heavy transverse rope insertions at regular intervals. It comes folded up in a paper carton which is placed in the regular metal container. The whole thing measures only 12x3x8" when in the tool box.

When emergency arises all that is necessary is to slip the box into its place in cleats under either running board, pull the end of the strip out of the slot and tie the rolls around a spoke in the rear wheel. Start your engine—the Haberstick rolls round your tire and gives you firm, dry traction in either direction.

HABERSTICK



The Haberstick can be used where it is impossible to put on chains. It gives you better traction than chains in soft places. It requires but one person to use it.

The metal holder can be refilled with a new tape at little expense, or the old strip may be washed and replaced.

Covered by Letters Patent in U. S. and Canada.

Price, $6.00.

AUTO ACCESSORIES COMPANY
Wheeling, W. Va.

CAR OWNERS

If dealer cannot supply you, we will ship direct, charges prepaid.

Ask Your Dealer First

Fill in this coupon and mail it with $6.00, cash or money order, to

AUTO ACCESSORIES CO.,
Wheeling, W. Va., U. S. A.

For the enclosed $6.00 send me one "WON'T LET YOU STICK," prepaid. You to refund my money if after following directions and giving it a fair trial, it does not accomplish what you claim for it.

Name .....

Street .....

City ..... State .....

Dealer's Name .....

Address .....

(If dealer's name is not given charges will not be prepaid.)



Attractive proposition for dealers—write us to-day for discounts and literature.

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STOP
and consider



the supreme importance of the brakes on *your* car. In traffic, down the hills, when emergencies arise — safety and prompt action depend largely upon the brakes, particularly the lining. Brake-lining that *wears* is always dependable. It responds immediately when you press the pedal or pull the lever. Where safety is concerned, why not pay a few cents more and get —

Raybestos
BRAKE LINING

Longest Wear

Raybestos wears to the last strand. Other linings may "grip" when first placed in the brakes, but they haven't that peculiar hardness which is so much a part of Raybestos. Raybestos is solidly woven of real asbestos, treated by a special process, which *insures* continuous service. Guaranteed to wear one year or more. Otherwise, your brakes will be relined. Security, economy, added convenience are valuable features woven into every foot of Raybestos.

The Silver Edge

There are many clever imitations of Raybestos. Some of these look like Raybestos, others have names of similar sound. Very often the supply dealer makes greater profit selling the imitation. But reliable dealers prefer to handle genuine Raybestos because it gives real service to their customers. To prevent substitution, we place a Silver Edge along each foot of Raybestos. The Silver Edge protects you from inferior substitutes. Look for it!

Sold by over 12,000 reliable supply dealers and garages.

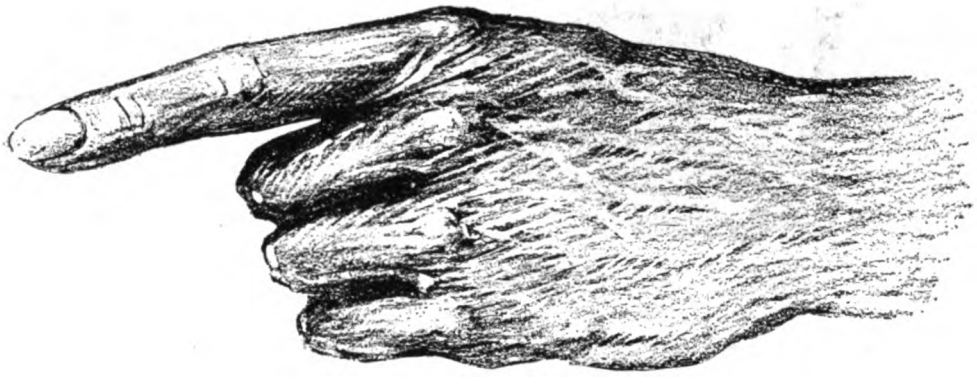
Manufactured by

THE RAYBESTOS COMPANY, Bridgeport, Conn.

January 13th, 1917—1 page. The Saturday Evening Post. **Page 1 during New York Show. The only brake lining ad to occupy a *preferred* position in The Saturday Evening Post.**

Digitized by Google

This was the OPENING GUN



The big Raybestos campaign for 1917 began with a full page in THE SATURDAY EVENING POST, Jan. 13th. A forceful, interesting advertisement. There are four more to follow. And a series of splendid 2-col. ads in THE SATURDAY EVENING POST and COLLIERS. 1917 will be a bad year for substitutes. 1917 will prove the most successful year in the history of

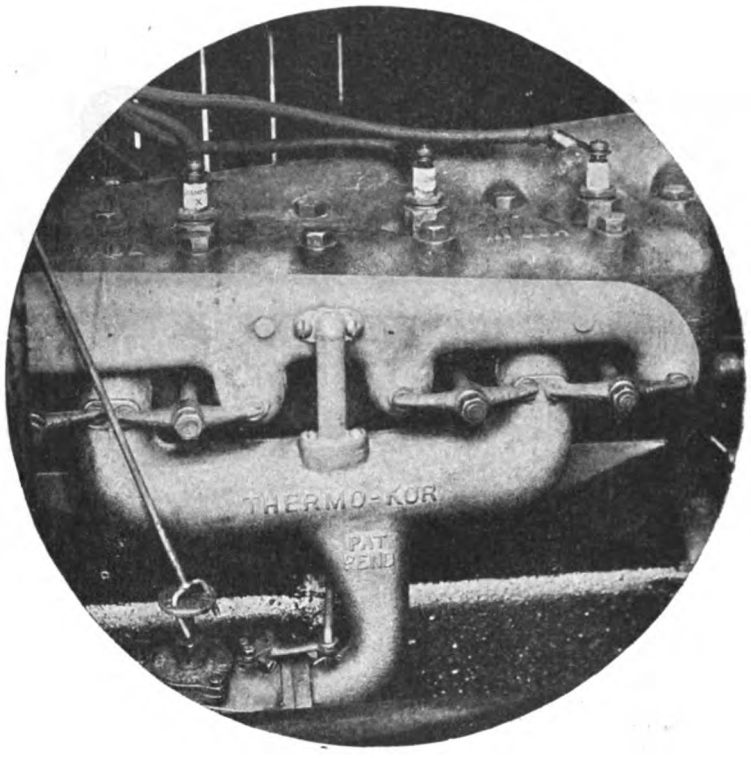
TRADE MARK Raybestos REG. U.S. PAT. OFF.

Brake Lining

Raybestos wears. It is honest merchandise. Raybestos wear backed by Raybestos advertising builds business, makes satisfied customers and long-run profits. Better sell the lining that is in demand rather than the short-wear imitations.

THE RAYBESTOS COMPANY Bridgeport, Conn.

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High Priced Cars Can Do No Better

The THERMO-KOR
(Heated Manifold)

This manifold has been specially designed to fit Ford cars. Similar devices have been adopted as standard equipment by the Packard and several other high priced cars in their effort to economize gasoline consumption.

It fits direct on the motor in place of the regular intake manifold and except for the opening into the exhaust manifold, the only mechanical work required to install it is bolting it in place.

The Thermo-Kor has been in constant use for 12 years. It has been shown to save almost 15% in gas, to eliminate carbon deposits, and prevent skipping in the coldest weather.

The Thermo-Kor consists of an intake manifold surrounded by a heat jacket warmed by the exhaust. By keeping the intake hot you insure complete vaporization.

Price (ready to attach) $5.00

With the low quality gasoline in use today the Thermo-Kor is a necessity.

Write us for discounts. They will make it worth your while to push Thermo-Kor.

Clark Gas Power Company
HERKIMER, N. Y.

METROPOLITAN DISTRIBUTORS
C. L. CLARK
141 Coles St., Jersey City, N. J.
534 Jamaica Ave., Brooklyn, N. Y.

CLARK GAS POWER CO.
Herkimer, N. Y.

Please send full information regarding your proposition to dealers as exclusive representative.

Name .....

Address .....

.....

.....

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Elgin Six

"The Car of the Hour"

Breaks Another Record

The Elgin Six has just established a new record of 67½ hours between Chicago and Miami, Florida.

Thirteen hours of this time was driven in a heavy rainstorm that made the roads slippery and dangerous, and in some places so deep and heavy with mud that the average car could not negotiate them at all.

The route included the steep, rocky mountain grades of Kentucky and Tennessee, the heavy sands of Georgia and the slimy, treacherous, swamp roads of Florida.

The Elgin Six has made perfect scores and won highest economy honors in some of the most gruelling endurance and economy runs of the past year.

Many other remarkable Elgin performances have firmly established the Elgin Six as *A Mechanical Masterpiece,* and a champion for long sustained speed, endurance and economy.

Special Elgin Features

The Elgin Six is the only car in its price class having the fashionable center cowl of the high priced European models. Its beautiful yacht line design was established by a famous artist and gives the Elgin Six a style and distinction that sets it apart from the monotonous design of the average car.

Elgin Engineers have perfected an improved rear spring suspension, found only in the New Elgin Six, which sets a new standard of motoring ease and comfort at high speeds, reducing shock and vibration to a point not surpassed in any car at any price.

The special construction of the Elgin velvet-acting clutch enables the Elgin Six to be started on high gear, under ordinary conditions, eliminating to a large degree the necessity of gear shifting, ***thus removing the last barrier to the safe and easy handling of a motor car by women.***

5-Passenger Touring
4-Passenger Roadster **$985**

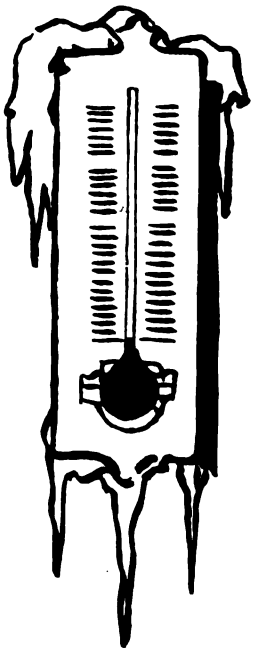
The completion of our big, modern, daylight Plant No. 2 has so increased our production that we are now entering new territory. Yours may be open.

Better wire us today for application blank and full particulars of 1917's best money-making proposition for dealers.

Elgin Motor Car Corporation, Chicago, U. S. A.

Digitized by Google

Capitalize the Cold



Demonstrate to Car Owners How a

THERMO Auto Heater

Arrests Fugitive Heat and Puts it to Work

A brief explanation of its construction and application will quickly demonstrate to the owner of any car (open or closed) the advisability of installing a Thermo Auto Heater. He is in a receptive mood now, this being the psychological moment for a discussion of car heating problems. So—

Explain to him that the initial cost of a Thermo is its only cost—

That it arrests the heat escaping through a car's exhaust, distributing it through the medium of a 28 x 4 in. radiating surface—

Explain how a thermostatic arrangement controls the temperature—

That by causing a sensitive piece of metal to expand excessive heat from the motor exhaust will automatically shut off the opening from the exhaust pipe to the heater, preventing overheating and consequent discomfort—

Show the ease of its installation, laying stress on the fact that only a few small holes need be bored in the floor of the car and that the pipe connections are of the simplest—

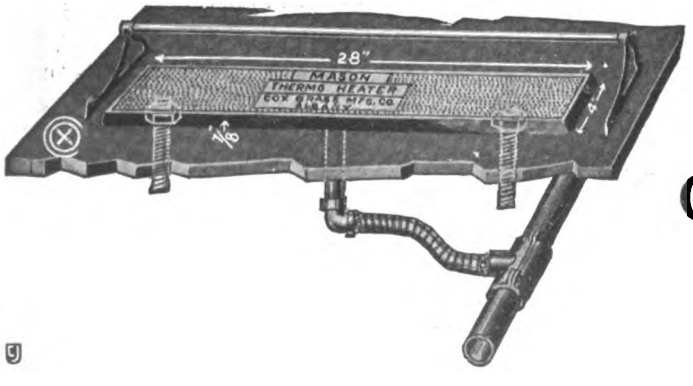
Point out to him that it projects only five-eighths of an inch above the car floor, and consequently never obstructs.

It will then be apparent to him that the Thermo Auto Heater is a highly efficient cold weather car accessory—a fact attested by the universal preference expressed for it and the corresponding increase in sales.

The demonstrating dealers, alive to opportunities, are cashing in on demonstrations like this. Are you? If not, get busy. Capitalize the cold.

Cast Iron, Black Enameled - $10.00

Bronze, Heavily Nickel Plated - - $15.00



With our stock fitting any exhaust pipe from 1½ to 3 in. in diameter can be fitted. This fitting has an asbestos packing that accommodates itself to the pipe diameter.

COX BRASS MFG. CO.

North Pearl and Van Woert Streets

ALBANY, NEW YORK

Branch Office: 1733 Broadway, New York City

Digitized by Google

CENTURY

6000 MILE



IF YOU ARE A TIRE DEALER and have customers who would appreciate a hand-made, highest quality tire, that will give them longer and more satisfactory service at less cost per mile actually traveled, you are the man we want.

The CENTURY TIRE is guaranteed for 6000 miles. It actually averages much farther, and it gives splendid service all the way, because it is made with that one end in view.

The CENTURY TIRE sells on the proposition that it more nearly eliminates tire trouble, both as to breakdowns and extravagant cost, than any other tire now made.

It is especially built to do this. Not quantity, but quality production is our aim. We are convinced that there are enough motorists who want just such a tire as the CENTURY to justify our taking the extra care and trouble to produce this unusual tire.

WE OFFER YOU AN UNUSUAL PROPOSITION on the basis of your having a number of just such customers. Exclusive territory, prompt deliveries, generous profit-making terms, and extraordinary sales helps will be given you.

We exhibit at the Chicago Show—Coliseum Annex, Space 213. Factory representatives will meet you and gladly go over the details of our proposition.

We should be glad to hear from you promptly if you are in position to handle such a tire in a big, generous, friend-making way. It means a permanent, profit-making business.

RUBBER TRADE RIMCO MARK PRODUCTS

Rubber Insulated Metals Corporation

Plainfield, New Jersey

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Viking Guarantee Tag

This genuine Viking Spark Plug is guaranteed by the maker to give entire satisfaction; should it fail to do so, return it to the maker with this tag. A new plug will be sent you free of charge, or your money will be refunded.

THE JOHN MacGREGOR CO., Inc., Fulton, N.Y.

Sales Department, Roslindale Station, Boston, Mass.



VIKING TRADE MARK SPARK PLUGS REGISTERED

This Guarantee Warrants Satisfaction

Sell VIKING Spark Plugs and play safe

Yes, sir! Every Viking spark plug is guaranteed to give satisfaction. Read that tag, every word of which we will uphold.

The future success of your business depends upon the sale of perfectly reliable goods—goods that are sure to give satisfaction and establish confidence, for in that way only can you hold and increase trade.

Viking spark plugs will not only help do that for you but will increase your sales quickly on a very small investment and without hardly any overhead expense.

Viking spark plugs are in big demand, easy to sell, and we furnish handsome display cards and a cabinet **free**—in fact, do all we can to help you sell as many as possible.

Why sell cheaper plugs and take the chance of making a dissatisfied customer at a small profit when Viking plugs are absolutely guaranteed to produce satisfied customers and a bigger, better profit?

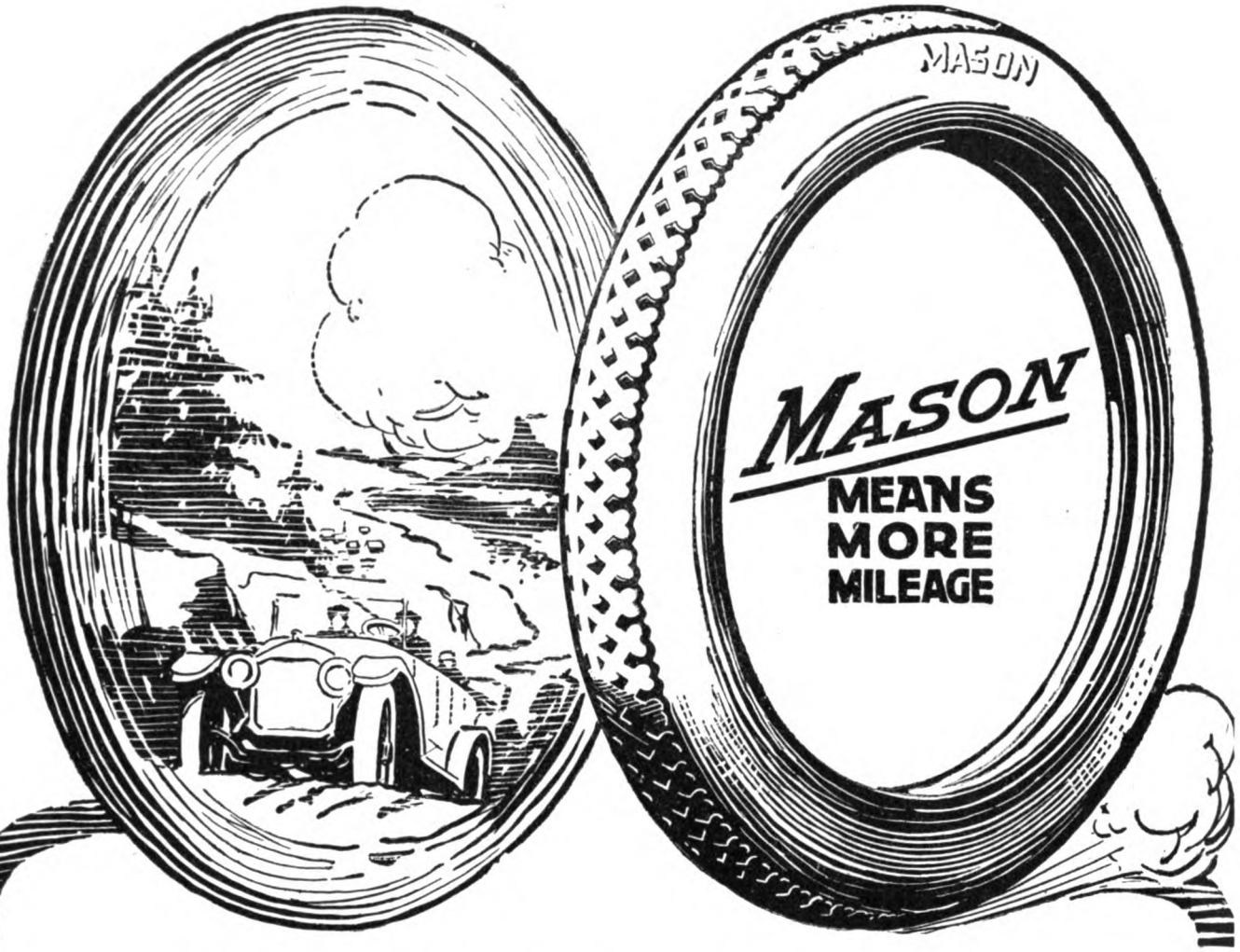
Write to us for all details. You will be surprised to learn how small an investment is required and how large the results.

(Sold only through legitimate dealers)

The John Mac Gregor Co., Inc.

Roslindale, Boston, Mass., U. S. A.

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The Mason Sales Plan Begins with the Dealers' Point of View

IN the first place, Mason Tires are of that substantial quality that builds "repeat" sales—and keeps customers pleased with the foresight and progressiveness of their garagemen.

Again, Mason Tires sell at popular prices.

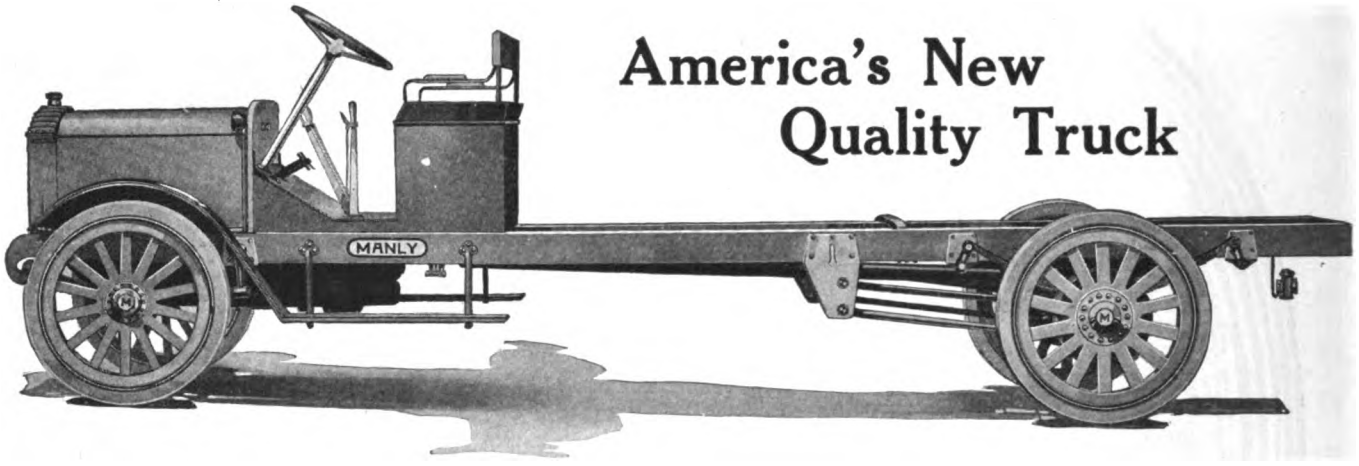
And Mason popularity in the dealer world is increasing rapidly because the Mason selling plan *really* adheres to the policy of small manufacturers' profit and big production.

Only a few distributing territories remain open; write us today for information concerning your territory.

MASON Tire and Rubber Company
Kent, Ohio

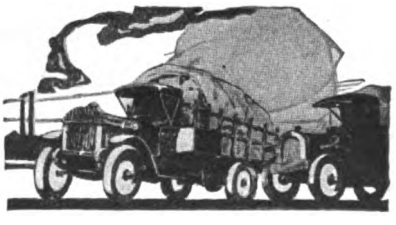
Akron Suburb.

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MANLY

1½-Ton 2½-Ton TRUCKS



NOW comes the realization of a new ideal in truck construction! For years a place has awaited a truck of MANLY qualifications in the commercial world. MANLY now definitely steps into that place—exploding old theories, erecting new standards.

Just another truck would mean nothing. But the timely appearance of a truck built **conservatively** upon the composite experiences of every successful truck manufacturer in the industry and then improved just as conservatively in accordance with the latest American and foreign engineering practice—these points emphatically differentiate and individualize the MANLY.

Twenty Remarkable Constructional Features—features prove in the fire-test of actual service to be of money-saving merit to users and sales creative value to dealers—set MANLY Trucks in a class far up among quality commercial vehicles.

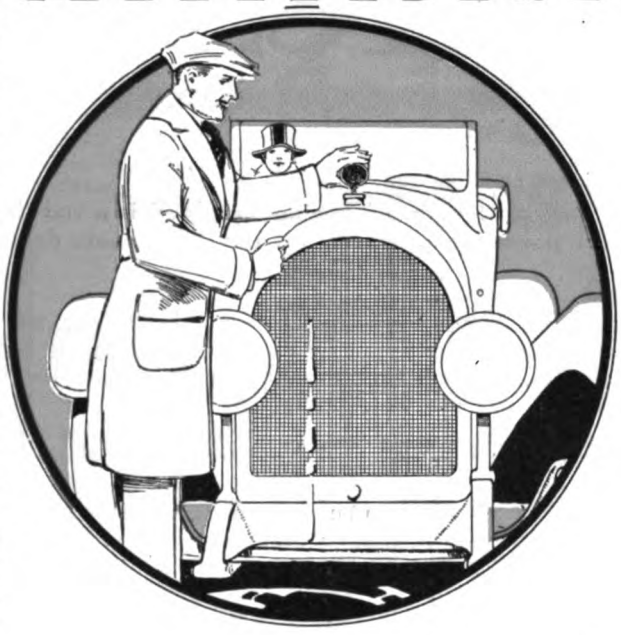
Wire or write for advance information or visit our factory during Chicago Show Week. Handsomely illustrated catalog sent on postal request.

Territorial arrangements now being made for early deliveries.

MANLY MOTOR CORPORATION

Factory
Waukegan, Illinois
General Offices
1432 Michigan Avenue, Chicago, Illinois

Digitized by Google



An *Instantaneous* Repair for Leaky Radiators

Invaluable when stalled by a leaky or damaged radiator miles away from home or the nearest repair shop. Worth ten times its cost when **needed.** A product you should be able to sell every car owner.

DUTCH BRAND



RADIATOR SEAL

Radiator-Seal is only one of many DUTCH BRAND Products that every car owner should **always** carry with him—driving about home or touring miles away from any repair service. Suggest to every customer a "first aid" assortment of DUTCH BRAND Products for his toolbox.

You will find your suggestion later on will be repaid with gratitude—and more business.

Other DUTCH BRAND Products

Auto Patching Cement insures a patch that will stick and stay stuck; **2 in 1 Tread Filler,** a liquid rubber, quickly closes casing bruises; **Rubber-Seal** permanently heals large cuts and gashes in casings and tubes; **Vulcanizing Cement** for use with small portable vulcanizers, or for shop use; **Carbo-Cide,** a carbon solvent of unsurpassed merit; also **Valve Grinding Compound, Auto Top and Cushion Coating, Gasket Shellac, Varni-Brite,** an Auto Polish, **Tire Talc** and **Friction Tape.**



"Look for the Dutch Girl on the label"

DEALERS: Stock DUTCH BRAND Products through your jobber. Send for catalog of complete line.

VAN CLEEF BROS.

Manufacturers Dutch Brand Rubber Cements and Auto Chemical Specialties

7701-7711 Woodlawn Avenue CHICAGO



Price 50c at all dealers

See us at the Chicago Show—Armory Balcony, Space 14. Full line of DUTCH BRAND Products on display. The Dutch Girl will be there to greet you. You are cordially invited to come and see us.

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DEALERS!

In selecting the car you are going to sell in 1917, consider the motor. Of course, you know as well as we do that it is the vital part of the car. "Engine Trouble" is a red flag passed from owner to probable purchaser poisoning prospects for the unfortunate dealer who has to buck against it.

Fortunately, there are lots of good motors. Ours isn't the only one by a long shot. But it is a **good** one, a mighty good one, and in some respects it is admittedly better than others. The lubricating system, for one thing, is absolutely unexcelled in the opinion of automobile engineers.

The SPILLMAN MOTOR can be found in many of the most attractive models of the 1917 cars, so there is no excuse for overlooking it. Whether you are going to handle a four, a six, or an eight, you can easily select a winner that carries, as a strong selling help, a SPILLMAN engine under the hood.

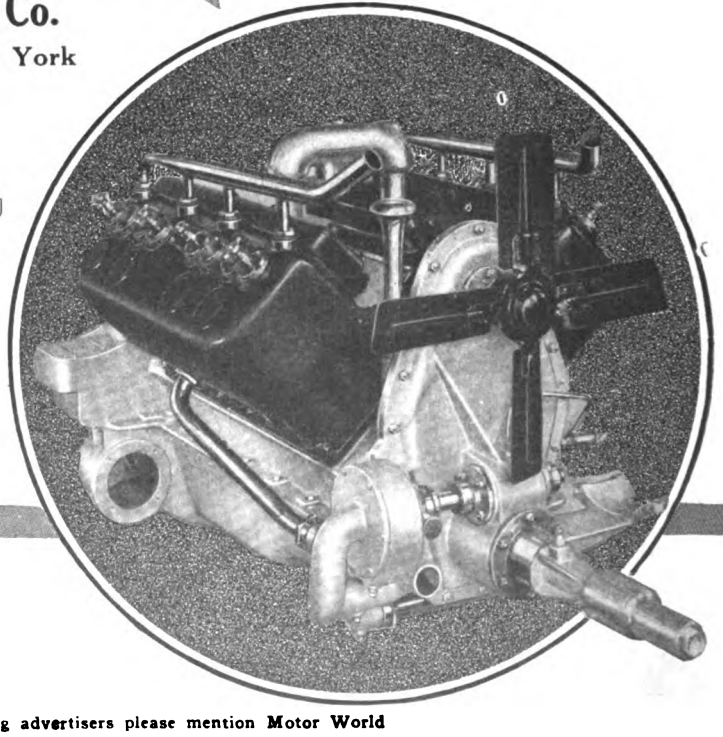
SPILLMAN "8"

You can certainly do no less than write for a full description of this motor. It is merely the part of wisdom, the part of ordinary business sagacity, to inquire into a thing which means so very much to you. You will be surprised at the many and remarkably efficient features of these motors.

All we ask is that you look into this question thoroughly, that you try out a car equipped with a SPILLMAN, and compare it, in all respects, with others that haven't a SPILLMAN.

We simply ask that you do not take chances on this thing. The coming year means a lot to you, one way or the other, and now is the time to make sure. A proper selection, a proper decision of this important question now, will mean so much to you later on. Remember the SPILLMAN now, and later on in the season it will be standing at your back helping you put over sale after sale!

Herschell-Spillman Co.
North Tonawanda New York



Plain Talks to Dealers No. 2

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WE want every jobber and every dealer to use our demonstrating stand and supply their salesmen with "7 Sales Reasons."

¶ We want you to push BOYCE MOTOMETER to the limit, and our demonstrating stand, if not already on your counter, should be without delay.

¶ Write us for discounts, etc.

THE MOTO-METER CO., Inc., 15 Wilbur Avenue, Long Island City, N. Y.

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DUP PHIL IGNITION

COMBINED IN ONE INSTRUMENT

By a turn of a switch

SINGLE SPARK SYSTEM

This new open circuit, single spark battery system is distinguished by many newly patented features that can be found in no other battery ignition system.

It is simple in construction and foolproof.

All working parts are perfectly balanced. Inertia or mechanical lag has been practically eliminated, thereby insuring greater flexibility and responsiveness from the motor.

A new and greatly advanced form of contact maker produces a very hot spark for starting and slow speeds and a constant and uniform spark for all running speeds.

At all speeds the temperature of the spark is extremely high, making it possible and advisable to use a *leaner* mixture than is customary with other ignition systems.

The result is a considerable saving in fuel and an *increase in power*, for while a *lean* mixture is most difficult to ignite it is the most *powerful* when fired.

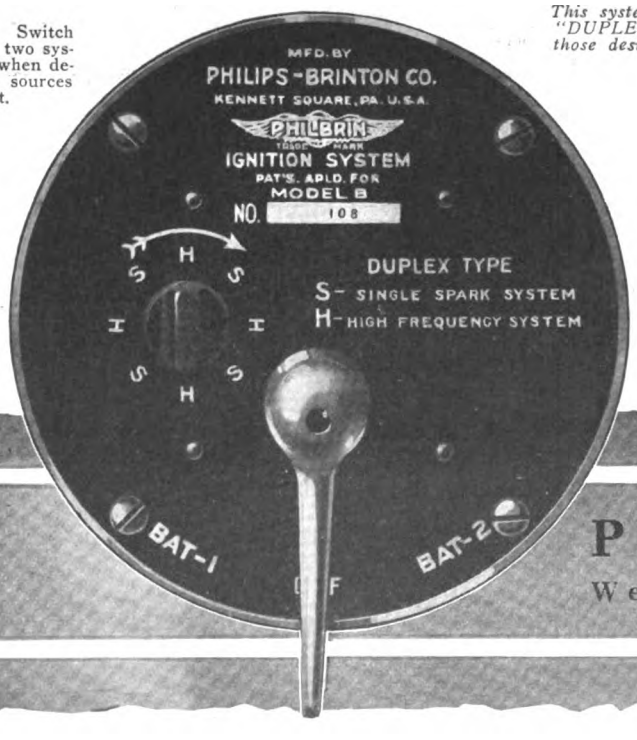
This new form of contact maker, because of its construction automatically eliminates lag, both electrical or mechanical at all running speeds without the aid of a governor.

The system also possesses a new form of armoured condensor that is immune to "ageing" or ordinary deterioration and is water, moisture and heat proof.

The coil is of great capacity although remarkably compact in size.

The current consumption is almost negligible. A single set of dry cells will operate a four-cylinder motor for months.

Duplex Switch combining two systems and when desired two sources of current.



This system is a part of the PHILBRIN "DUPLEX" but it is made separately for those desiring a single system of ignition.

Run on either system you will. There is always a second system in reserve—*absolute insurance against ignition failure.*

Each system has its own individual advantages. Either system can be used continuously. Neither system will wear out before your car.

Write for complete descriptive catalogue.

JOBBERS—DEALERS

Distributing arrangements are now being completed with the trade. Jobbers, Dealers and Service Stations write for particulars.

PHILIPS-BRINTON

Weidener Bldg., Sales

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LEX BRIN SYSTEMS

TWO WONDERFUL IGNITION SYSTEMS

either system can be used

HIGH FREQUENCY SYSTEM

This is a system that is especially designed to derive full maximum efficiency from the motor when the condition of the gasoline, or the motor itself, or the adjustment of the carburetor is such as to render efficient ignition difficult.

Such conditions include:

Starting or running a cold motor,
Low grade gasoline,
Poor adjustment of the carburetor (frequently due to changes in the temperature of altitude),
Carbonized cylinders,
Unusual up-hill grades.

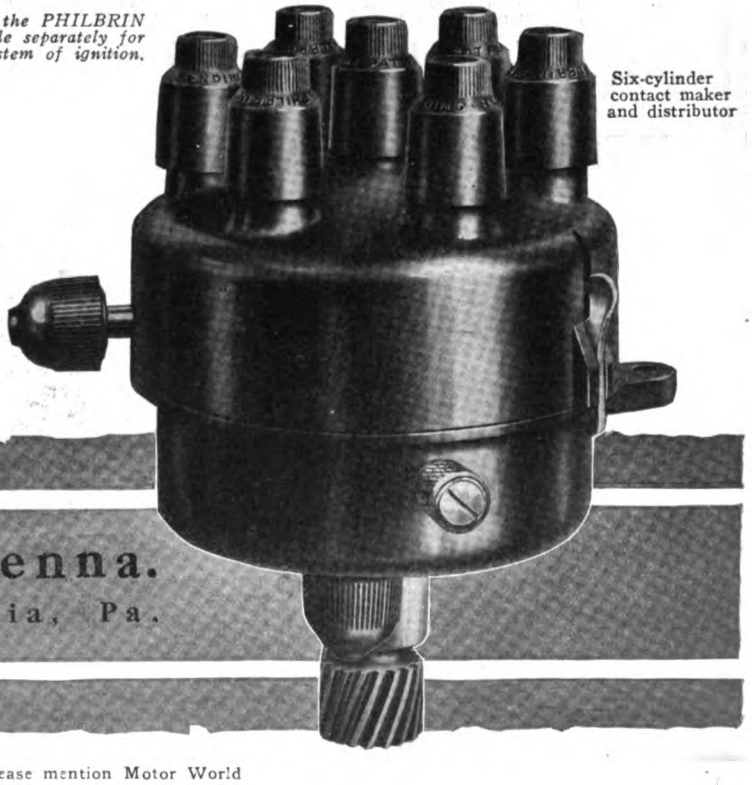
Instead of a single spark this system distributes a "show of sparks" of remarkable intensity to each cylinder in its firing order at the rate of *a thousand sparks a second.*

Almost any mixture under almost any conditions will give way before this system, so rapid is the "follow-up" of sparks and so high their temperature.

For starting in cold weather, for taking stiff uphill grades on high, for cleaning and keeping clean the spark plugs, for utilizing poor grades of fuel, this system is most invaluable to the motorist who insists upon full maximum efficiency under every possible conditions met in motoring.

This system, like the single-spark system, consumes almost negligible current and can be used continuously when desired.

This system is a part of the PHILBRIN "DUPLEX" but it is made separately for those desiring a single system of ignition.



Six-cylinder contact maker and distributor

Philbrin "Duplex" systems are built for 2-cylinder, 3-cylinder, 4-cylinder, 6-cylinder, 8-cylinder and 12-cylinder motors.

Philbrin systems can easily be installed in place of your present ignition system. No motor changes necessary.

Only one set of spark plugs necessary. Smaller in size than the average single ignition system.

CO., Kennett Square, Penna.

Office Philadelphia, Pa.

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Inter-State

MUNCIE IND. U.S.A.

See This Line Of Extra Value Cars At The Chicago Show

At no time in the history of the Inter-State Motor Company has the Inter-State been so popular as it is today.

The unbounded enthusiasm of prospective buyers and the large number of requests for territory concessions at the New York Show are conclusive proof of the confidence there is in a product which has stood for one thing through three years of continuous growth—a definite standard of Extra Value.

At the Inter-State booth during the Chicago Show we will exhibit the actual signed service records of Inter-State owners from all over the country.

These service records have a definite message for owner and dealer alike. It will pay you to see them.

DISTRIBUTORS

Auto Sales & Distributing Co., Harrisburg, Pa.
Berridge Motor Car Co., Montgomery, Ala.
Blackburn Sales Co., Buffalo, New York.
Edward L. Byrns Co., Cincinnati, Ohio.
Smith Motor Co., Detroit, Mich.
Cicero Auto Co., San Antonio, Tex.
Cornelius-Browning Auto Co., Toledo, Ohio.
R. M. Flagg, Bangor, Maine.
Forest City Motor Co., Cleveland, Ohio.
Garland Auto Co., New York, N. Y.
Graulich Auto Co., Evansville, Ind.
Hanley Auto Co., Muncie, Ind.
Headington Auto Co., Denver, Colorado.
Fred Hutchinson & Son, Jefferson, Iowa.
Inter-State Auto Co., Spokane, Wash.
Inter-State Auto Co., Sioux Falls, S. D.
Inter-State Boston Co., Boston, Mass.
Inter-State Motor Car Co., Philadelphia, Pa.
Rudolph Isch, Peoria, Ill.
Rudolph Isch, Chicago, Ill.
Johnson Motor Co., Fond du Lac, Wis.
Sam Johnson Motor Co., Hobart, Okla.
Thos. J. Junkin, Natchez, Miss.
Kanouse Auto Co., Indianapolis, Ind.
Kunkel Wagon Co., Baltimore, Md.
Lagerquist Auto Co., Des Moines, Iowa.
J. S. Lehman, Lexington, Ky.
S. Fulton Minter, Norfolk, Va.
Model Garage Co., Knoxville, Tenn.
Geo. A. Morse, Inc., Minneapolis, Minn.
Mountain States Motor Car Co., Ogden, Utah.
Murphy Machine & Equipment Co., Memphis, Tenn.
Oklahoma Chalmers Sales Co., Oklahoma City, Okla.
Peoples Motor Co., Louisville, Ky.
Service Boat & Engine Co., Syracuse, N. Y.
H. L. Shryock, Stephens City, Va.
Superior Motor Car Co., St. Louis, Mo.
Traynor Auto Co., Omaha, Nebr.
Twyman Motor Car Co., Columbus, O.
J. E. Van Wagener Auto Sales Co., Pittsburgh, Pa.
A. M. Wall, Mason City, Iowa.
Western Motor Co., Kansas City, Mo.
Woodruff Machinery Mfg. Co., Winder, Ga.
Wright Motor Car Co., Los Angeles, Cal.

Dealers Everywhere

INTER-STATE MOTOR CO.

MUNCIE, INDIANA.

MUNCIE Inter-State INDIANA

Some Extra Value Features

Powerful, high-speed, long-stroke, extra efficiency motor.

Beautiful streamline, comfortable bodies.

Two unit Remy Electric Starting, Lighting and Ignition System.

Over-size tires, non-skid on rear.

Double ventilating Windshield.

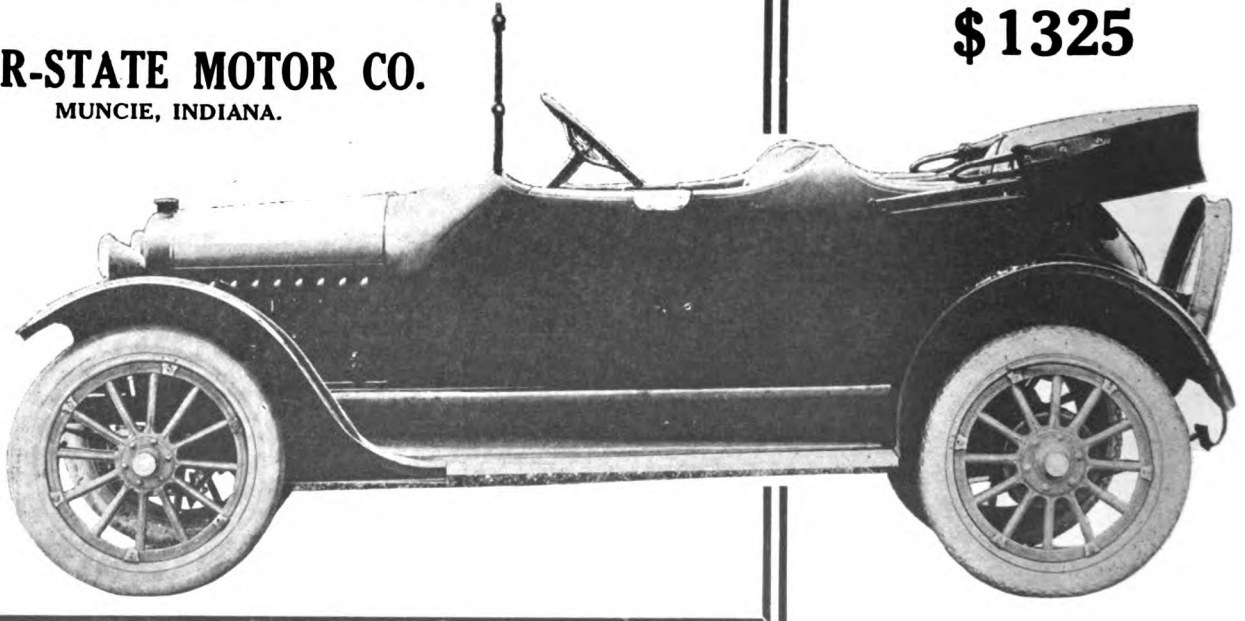
Improved one-man top. Aluminum running boards. Hyatt bearings. Heavily braced crown fenders.

Schebler carburetor.

Fedders radiator.

The most accessible medium-priced car on the market.

$850 to $1325



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"PERRY"

The Only Lock That Thieves Can't Beat!

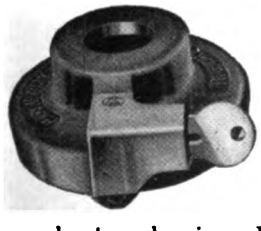
A Thief-Proof Lock For Every Car



For cars other than Fords.

The **"Perry"** fits every make of car. Can be installed by any mechanic in 15 minutes. Does not interfere with or change any of standard parts of steering gear. Absolutely safe to drive when unlocked. And no one can drive or haul a car when locked.

For Fords—$5.00



Fastest selling Ford specialty the trade has ever seen. Greer Automobile Co. sold 95 of the first 100 inquiries. Lock replaces standard Ford cap on planetary housing. Liberal profit to you. Write today for prices.

The **"Perry" Auto Lock** is by far the surest method of foiling automobile thieves. Insurance experts state that it is the only lock that cannot be conquered by a clever mechanic.

When the lock is turned the steering wheel spins free. It is entirely disconnected from the front wheels. And the car cannot be driven or hauled away because there is no possible way to steer it.

Double Your Profits Next Month

Is there a **"Perry"** dealer in your town? If not you can probably double your accessory profits next month—by selling **"Perry" Auto Locks.** Look into this proposition right away. Only lock of this type. No competition. The price is right—the profit is splendid—and every car owner is a live prospect for a **"Perry,"** no matter whether he has another lock or not.

Our dealers have proven that it is easy to sell over ninety locks to each hundred customers who see the **"Perry."** Mail the coupon and get the facts.

Write Quick for Big Offer!

The first dealer in the field is the one who makes the big money on the **"Perry."** Get started now and add from $400.00 to $800.00 to your sales for next month. Help your customers to reduce their insurance at least 15%. Read the special descriptions in the column to the left and then write.

Mail This Coupon Right NOW ☞

PERRY AUTO LOCK COMPANY

Dept. E-4. 1238-40 Michigan Blvd., Chicago

The "Perry" Is The Only Lock That Thieves Can't Beat

Mail the Coupon

"Tell Me About It"

Perry Auto Lock Company
Dept. E-4, 1238 Michigan Blvd., Chicago, Ill.

Gentlemen: I have read your description of your "Perry" Auto Lock in Motor World and would like to know about your special proposition to dealers.

I sell..... *cars*

Name.....

Address.....

Town..... *State*.....

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Our Expansion means Bigger Business for Scripps-Booth Dealers

Scripps-Booth Cars hold a distinct and sure place in the public mind

Distinct—because they alone include the comfort and luxury that your customers associate with heavier, costlier cars, plus the handiness and economy that are possible only in light-weight.

Sure—because Scripps-Booth cars have proven as good as they are good-looking.

This year the Scripps-Booth dealership will be especially coveted.

Our plans for national expansion mean greater opportunities for profit.

Our larger production will help the Scripps-Booth dealer to overcome the normal difficulty of over-demand.

Our large national campaign of publicity will increase the steadily growing demand for Scripps-Booth cars.

Pages exploiting Scripps-Booth individuality will appear in the Saturday Evening Post twice a month during the selling season.

Similar space will be used in the Literary Digest, other prominent magazines and the "Style Periodicals" that appeal particularly to women.

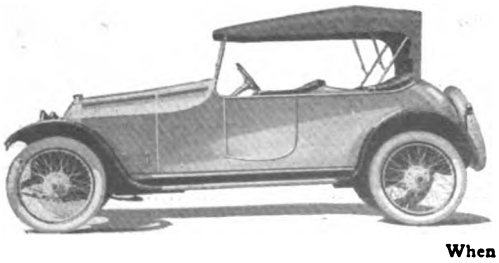
Local newspaper copy and direct work will certainly focus these national impressions on the dealer's salesroom.

You can readily foresee the increase of business that will follow this intensified bid for favor on a car that is already nationally popular.

We want a progressive dealer in every territory who is alive to the opportunities for greater Scripps-Booth profits.

Write for further interesting news of our plans to develop Scripps-Booth sales.

Scripps-Booth Corporation
Detroit, Mich.



Four-Cylinder Roadster . . . . . $ 935
Four-Cylinder Coupe $1450
Eight-Cylinder Four-Passenger $1285
Eight-Cylinder Town Car $2575

When writing advertisers please mention Motor World

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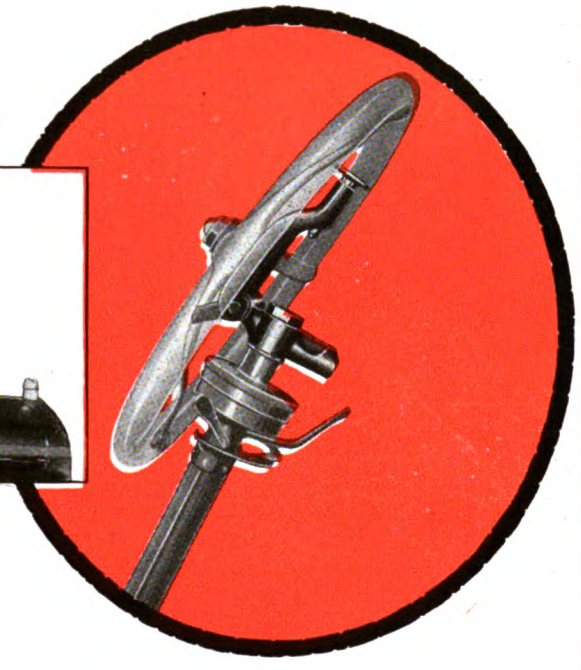
WARNER "Wheeltilt"

GEAR COMPANY OF MUNCIE

FOR

Ford Cars





[The Wheeltilt in tilted position

$1.50

Tilt your Ford Steering Wheel absolutely out of your way

The Wheeltilt is put on with five minutes work. No machine work is necessary. You use your own Ford steering wheel.

You will want the driving comfort this adds to your car

AMONG ITS ADVANTAGES:

- It utilizes the present steering wheel.
- It tilts the wheel completely out of the way, as shown by the illustration herewith.
- It can be securely applied in five minutes by anyone who can use a wrench.
- It allows the driver to enter or leave his seat without crowding the passenger beside him.
- It is a positive convenience for adjusting robes, buttoning overcoats, etc.
- It enables the woman driver to seat herself without inconvenience.
- It is the only means of rendering a small car really comfortable for a stout driver.
- It releases with a light pull of the fingers, yet it is secure and rattle-proof when latched in driving position.
- It is inexpensive and inconspicuous, as well as strong and reliable.
- It prevents any necessity of your seat mate leaving the car to allow you to get out or in.

See It at THE CHICAGO AUTOMOBILE SHOW, Coliseum Gallery No. 45

WRITE FOR DESCRIPTIVE CIRCULAR

DEALERS:—Do not fail to write for our liberal agency proposition on what is proving the livest and best-selling accessory the trade has known in years. Deliveries made from the factory on receipt of price, or buy it of your dealer.

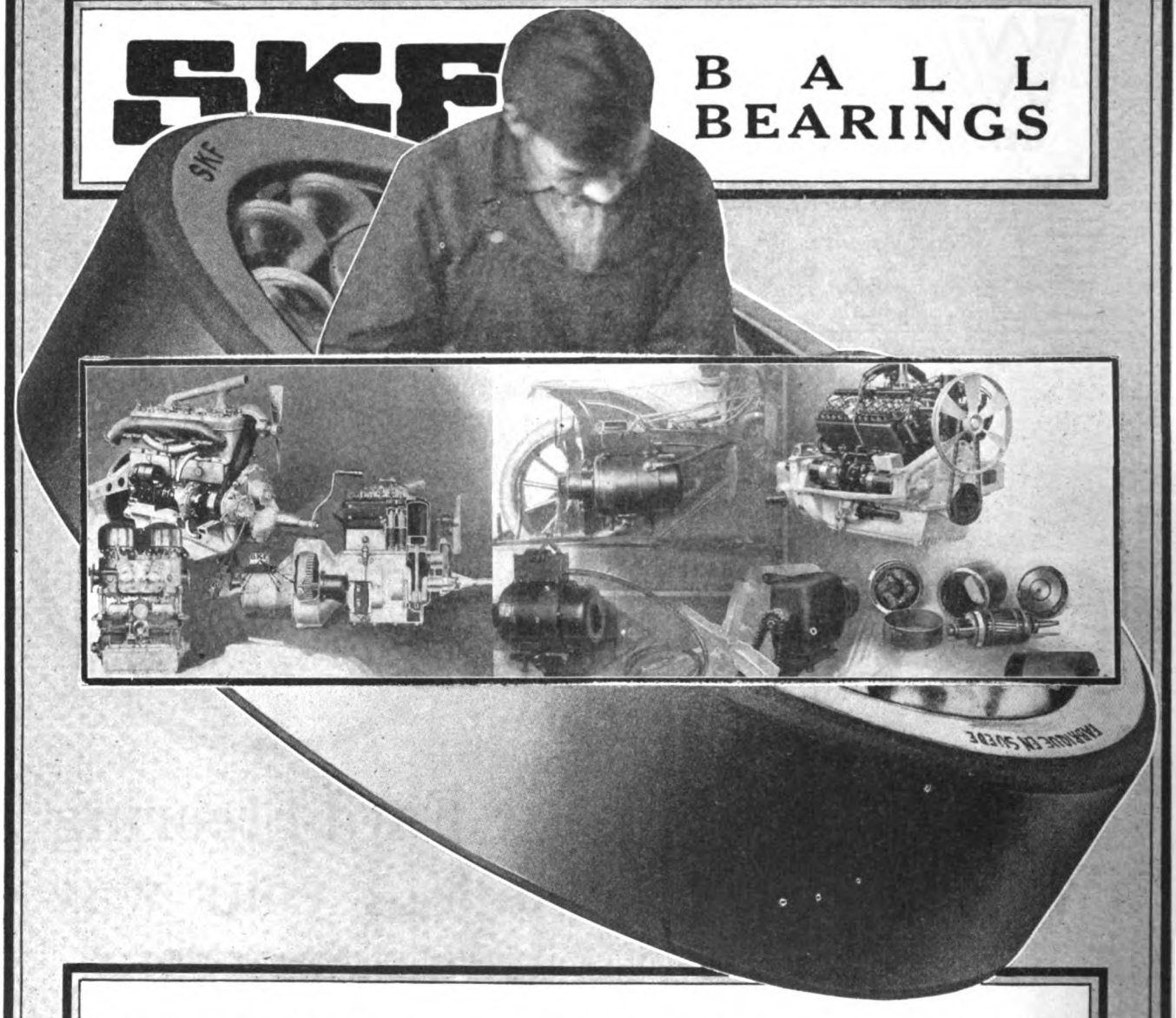
WARNER GEAR COMPANY, Muncie, Indiana

Address all correspondence to Accessory Department

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SKF

BALL BEARINGS



MAKING THE MOTOR DEPENDABLE

What kind and what quality of bearings are used does not concern the assembler. To him, a ball bearing, its installation and adjustment are mere incidents in a day's work.

But it means vitally more to you—for it is the kind and quality of the bearings that go into your car's motor, transmission, axles and auxiliary equipment that keep it on the road.

No motor is any better than its bearings—no better than its main shaft bearing—no better than its secondary bearings. And for the reason that the function of one bearing is as important as the function of one many times as big and as prominent, it never pays to accept any bearing short of the best.

S K F Ball Bearings are made of Swedish Crucible Steel and their double row of balls in staggered relation insures not only strength and endurance beyond the capacity of the average type and kind, but the degree of exactitude to which each detail of their manufacture is carried, underwrites *"Quality and Service."*

HARTFORD **SKF BALL BEARING CO.** CONN.

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ADVERTISING won't make Havoline Oil a better lubricant for automobiles. But it will make you better acquainted with Havoline and will heighten your confidence in it. The present big Havoline advertising drive would be a waste of money unless Havoline in actual use proved itself to be MORE than just a good motor car lubricant.

HAVOLINE OIL

Reg. U. S. Pat. Off.

"It Makes a Difference"



Striking Havoline advertisements will appear in rapid succession in the

Saturday Evening Post	**Collier's**
Literary Digest	**Leslie's**
Christian Herald	**Life**

and other great periodicals. Copy will also appear in the leading automobile journals, and in a big list of farm papers.

This impressive volume of Havoline advertising on a national basis serves two effective purposes.

FIRST. It is a guarantee of quality—for no manufacturer would dare advertise his goods in this manner unless they absolutely delivered the values that the buyer was led to expect.

SECOND. It will bring the demand for Havoline to the door of the dealer in a volume that has never before been touched—for forty million readers cannot be reached with this frank, sensible, straightforward deluge of Havoline publicity without a great wave of response.

These two objects loom back of the investment of the refiners in this campaign. The size of the investment should leave no doubt in the mind of any dealer, owner, or manufacturer that Havoline's makers are offering a correct lubricant for automobiles.

Havoline is easy to recognize—to identify. It comes to you in sealed cans, dark blue with white lettering, containing full measure.

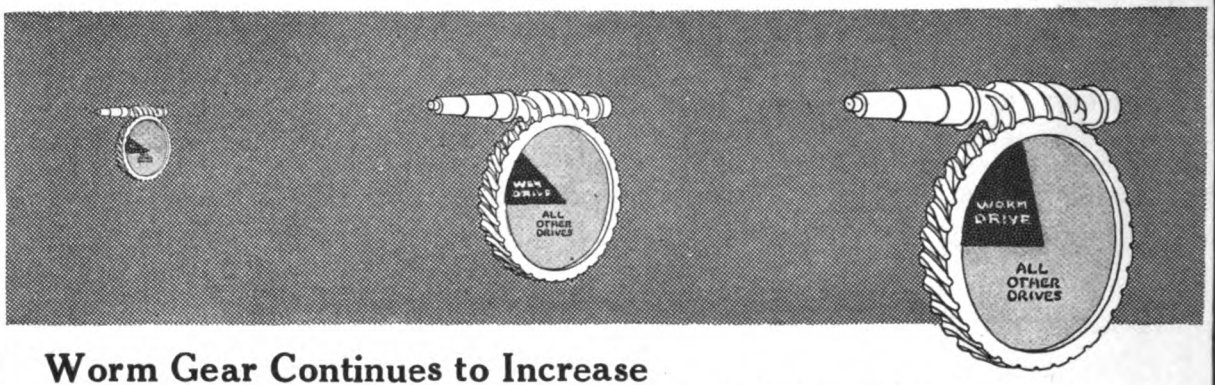
Havoline advertising, coupled with the sound, consistent principles of Havoline merchandising, is the dealer's guarantee of steady sales.

Indian Refining Co., Inc., New York

Producers and Refiners of Petroleum

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1913 1914 1915



Worm Gear Continues to Increase

FOR 1917 almost a 50% increase in the use of worm gear has been registered, according to the accepted statistics as compiled from manufacturers' reports. This brings the percentage of worm gear models for 1917 up to 61½%, with five other methods of drive dividing the balance.

¶ It should be noted that this is a percentage of models produced—rather than trucks actually produced—the only fair way to estimate, as the other method, that of actual number of trucks produced, will show an even larger percentage in favor of worm gear.

SHELDON

¶ Chain drive has fallen from 79% in 1913 to 69% in 1914, 59% in 1915, 33% in 1916 to 20% in 1917.

¶ The internal gear rose from 1% in 1913 to a little over 12% in 1916, but this year it drops off to less than 10%.

¶ In this same length of time the worm gear has risen steadily from 1% in 1913 to 61½% in the coming year.

In other words the marked superiority of the worm and gear as a type of final drive is so thoroughly recognized that nothing can stop its progress and dominancy.

THE SHELDON AXLE AND SPRING COMPANY

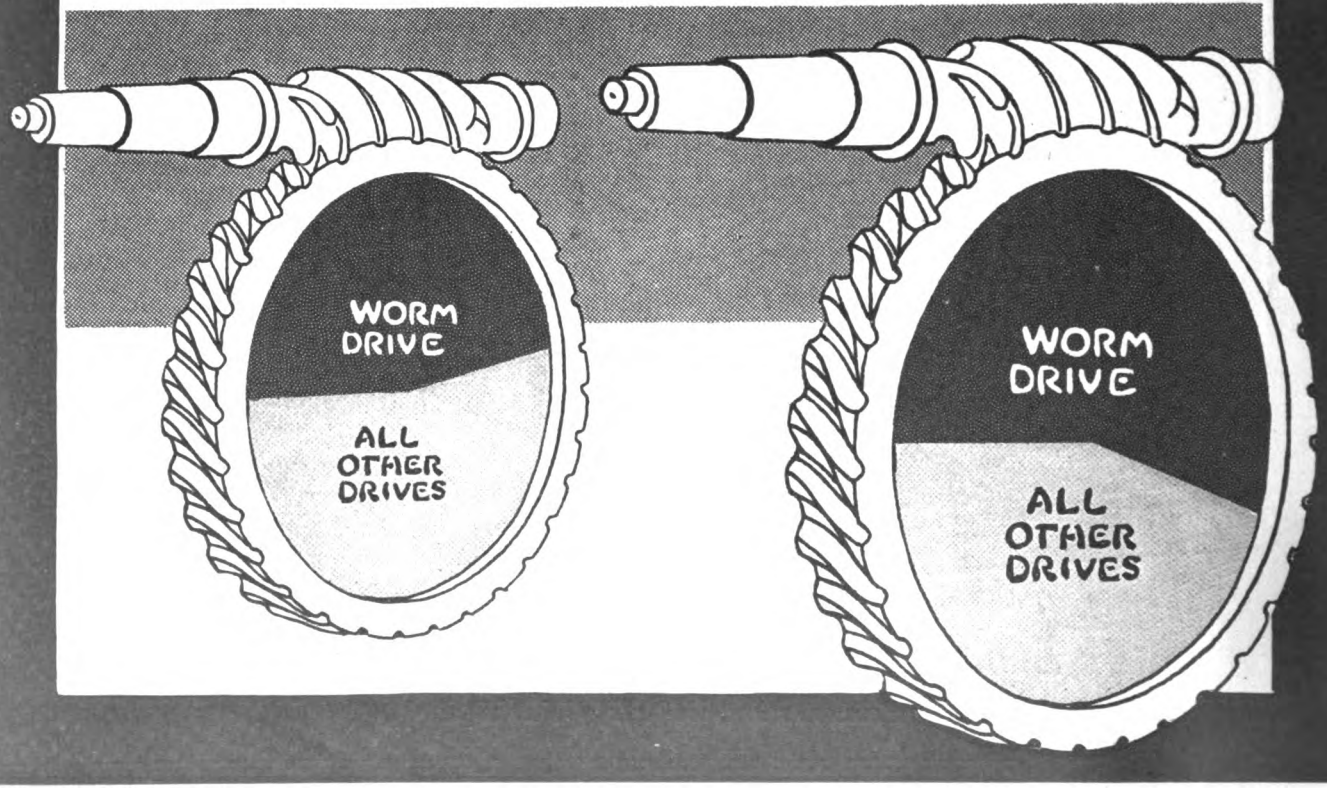
Licensed under the Kardo patents.

Makers of Springs and Axles for More Than 50 Years

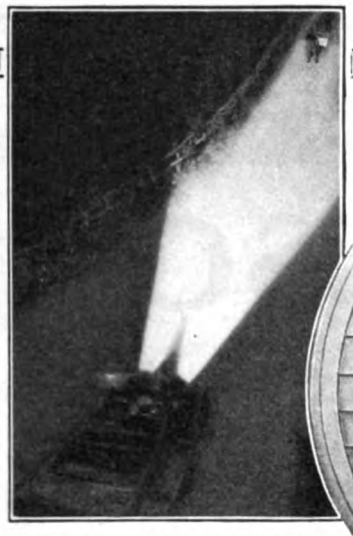
WILKES-BARRE PENNSYLVANIA

Chicago: 122 S. Michigan Blvd. Detroit: 1215 Woodward Avenue San Francisco: 444 Market Street

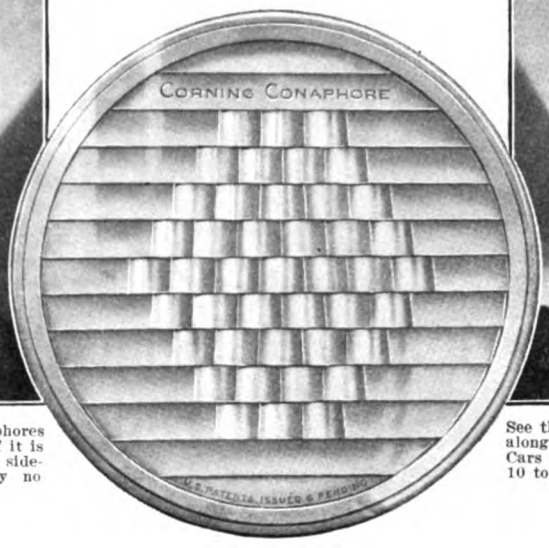
1916 1917

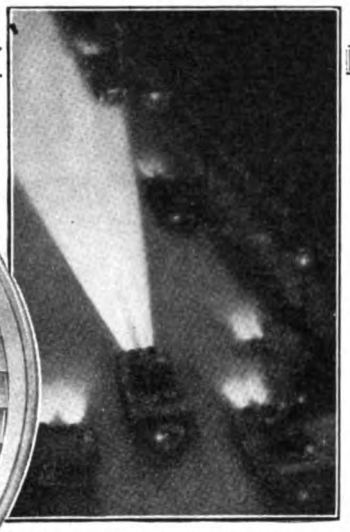


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The man behind a pair of Corning Conaphores can read a sign 500 feet from his car, if it is held in the beam of light. Notice ample side-light. A 500-foot range means safety no matter how fast you drive.





See the car with Corning Conaphores speeding along through the fog at 25 miles an hour. Cars with ordinary headlights creep along at 10 to 15 miles an hour behind a blinding blur.

Range 500 Ft.—Pierces Fog

The Only No Glare Headlight Glass With These Features

Motorists have long felt the need for a scientific headlight. They want a headlight with long range and strong side-light, but no glare.

States and cities have emphasized the need for such a headlight by passing strict "anti-glare" laws in an effort to make night-driving safe. During 1917, laws requiring the use of a scientific headlight will be in force everywhere.

Ordinary Headlights Dangerous

The ordinary headlight is not satisfactory. It has a bulb to give the light and a reflector to reflect the light, but nothing to control the direction of the rays. The glass merely keeps out dirt and water.

Such headlights are dangerous. They dazzle approaching motorists and pedestrians. The driver has to dim constantly. Tilting lamps downward may reduce the glare, but it greatly decreases the range.

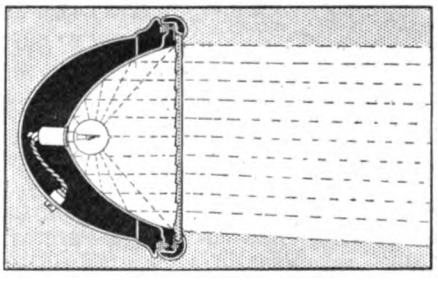
Function of the Conaphore

The headlight problem has been scientifically solved by adding to the bulb and reflector a third part, the Corning Conaphore.

The Corning Conaphore is a scientific headlight glass which directs the rays of light from the bulb and reflector, so that the beam will have long range, ample side-light, will not glare and will pierce fog and dust. Tests shown on this page prove the efficiency of the Corning Conaphore.

Scientifically Correct

The Corning Conaphore is made by the Corning Glass Works, Corning, N. Y., the largest manufacturers of technical glass in the world. This company makes practically all the signal glass used on American railroads. The fact that the Corning



SIDE VIEW OF CORNING CONAPHORE

Conaphore was designed in the laboratories of the Corning Glass Works is the best guarantee that it is scientifically correct.

Five Major Advantages

First Four Exclusive

1. Gives headlight range of 500 feet when a standard bulb of 21 candle power or more is properly focused.
2. Cuts out all the glare yet uses *all* the light, thus complying with all city and state no-glare laws.
3. Penetrates fog, dust or smoke, so you can easily drive 25 miles an hour under adverse weather conditions.
4. Has strong side-light which illuminates the roadside; the Noviol Beam makes the green stand out so you can distinguish bushes and ditches.
5. Never clogs with dust or mud in summer or with ice or snow in winter, and is easily put on any car.

Made in Two Kinds of Glass

Corning Conaphores are made of clear glass as well as Noviol Glass. Clear glass Conaphores are equally efficient in giving long range and eliminating glare, but lack the added advantages possessed by the Noviol Glass of eliminating back-glare and penetrating fog or dust. We strongly recommend the Noviol.

Prepare for Big Demand

Everything points to a big year in the automobile headlight business. Strict no-glare laws will be in force in practically every state. Already a strong demand is being felt for Corning Conaphores. A progressive advertising campaign will increase this demand. Jobbers and dealers should get their orders in at once to insure early delivery. Write today for 1917 proposition.

Price List

Noviol Glass	Per Pair	Clear Glass	Per Pair
3 to 4⅞ in. inc.	$1.80	3 to 4⅞ in. inc.	$0.80
5 to 6⅞ in. inc.	2.40	5 to 6⅞ in. inc.	1.60
7 to 8⅛ in. inc.	3.50	7 to 8⅛ in. inc.	2.50
8⅝ to 10 in. inc.	4.50	8⅝ to 10 in. inc.	3.00
10⅛ to 11½ in. inc.	6.00	10⅛ to 11½ in. inc.	4.00

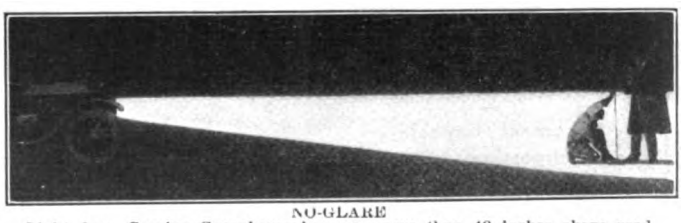
Prices 25 cents more per pair west of Rocky Mts.

Sizes vary by steps of ⅛ inch.

CORNING GLASS WORKS
CONAPHORE SALES DIVISION
EDWARD A. CASSIDY CO., Inc., Managers
537 Foster Building New York City

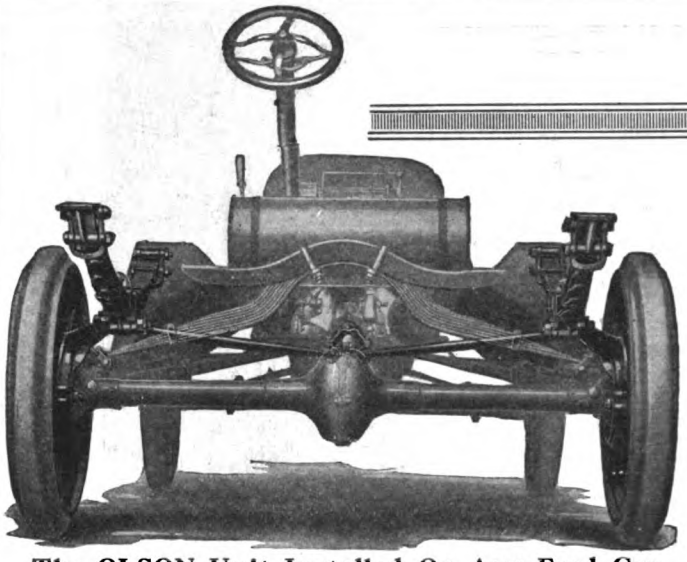


ORDINARY HEADLIGHT'S GLARE
The ordinary headlight blinds you with its glare. Glare means danger.



NO-GLARE
Light from Corning Conaphores is never more than 42 inches above road.

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The OLSON Unit Installed On Any Ford Car

OLSON Dealers Get Immediate Deliveries While Others Wait

All over the country OLSON Dealers are **ready to deliver for $65,** the same service that others are trying to sell for more than $300, after indefinite periods of waiting.

It may take the farmer and the grocery man, or any of the hundreds of other prospects for units that convert Ford cars into ton capacity trucks, a long time to make up their minds to buy—but when they do, *they want immediate delivery.*

That's how OLSON Dealers—always ready to give immediate service—

Close The Ready-Made Business Others Can't Handle and Your Own Big-Time Sales Besides

The OLSON Unit, for *$30* and *$65* opens up a big new field that other salesmen can't touch. It makes up the mind of the thousands wavering in their decision to buy,

The value of the Ford car as a ton truck is as widely known as the car itself. Thousands of sales are to people already sold—and the closing argument is *price.* OLSON Dealers can talk price big. They put over sale after sale at *1/5 and 1/10 the prices of competitors* —and they do it solely on price, because all the units are about equally efficient workers.

Write For Full Details Today

There's a lot to be known about OLSON Units that every dealer after profits should know. They are the profit-proving facts that sign up new territory every day. *Write now,* while our answer may mean money to you.

SWEDISH CRUCIBLE STEEL CO.

Factories
Detroit, Mich., U. S. A.
Windsor, Ont., Canada
Address Wheel Dept.

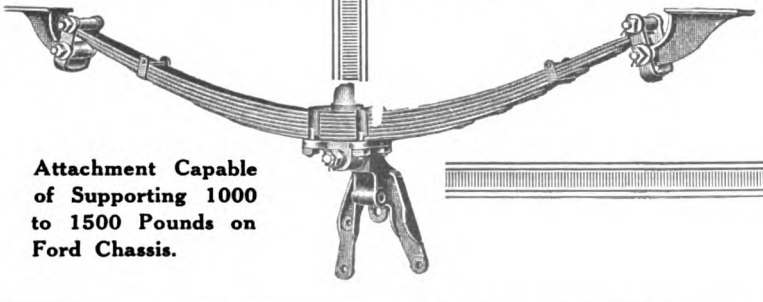
Price Complete Only

$65

F. O. B. Detroit

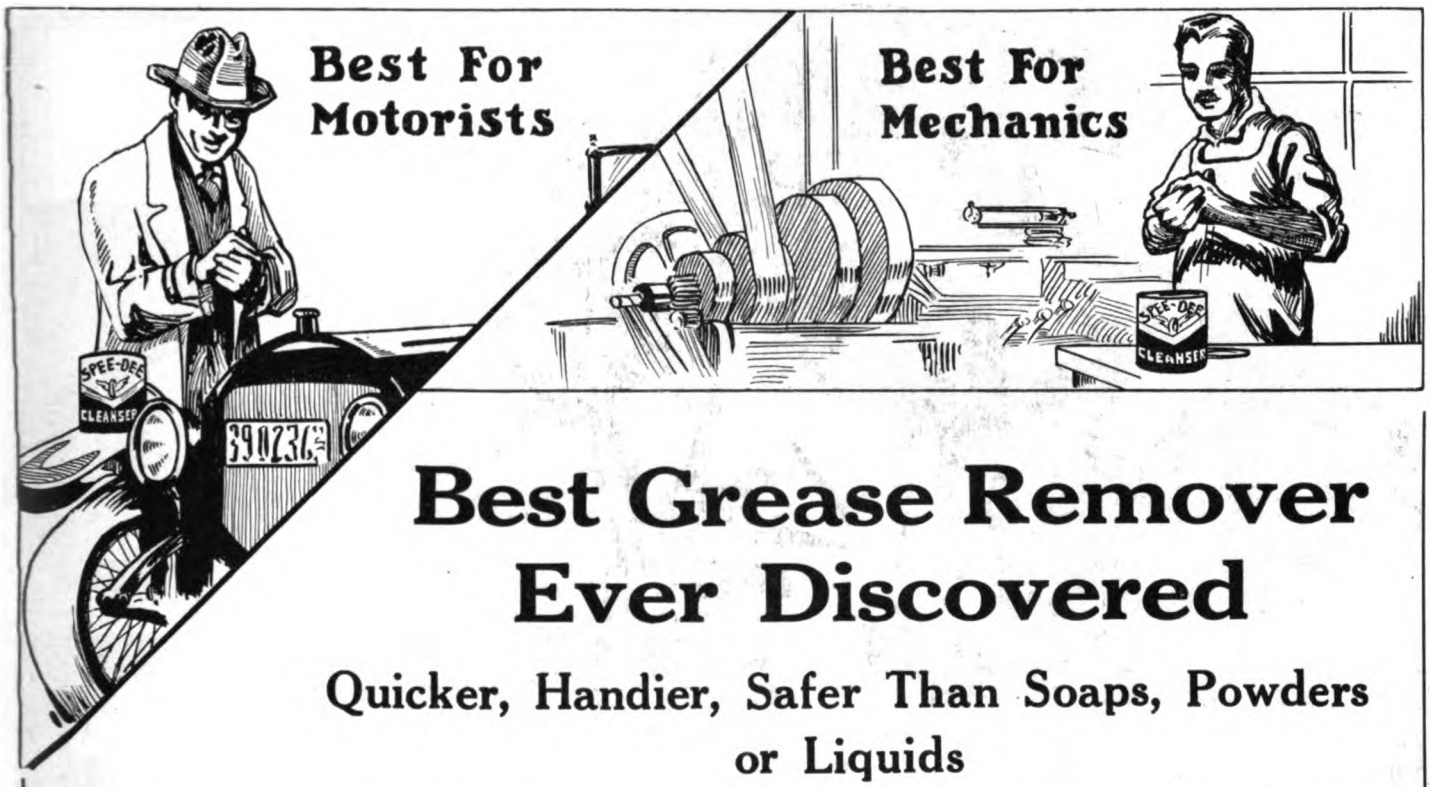
$30

F. O. B. Detroit



Attachment Capable of Supporting 1000 to 1500 Pounds on Ford Chassis.

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Best Grease Remover Ever Discovered

Quicker, Handier, Safer Than Soaps, Powders or Liquids

Spee-Dee is a revelation cleanser—a dirt and grease remover that far surpasses anything you have ever seen.

Spee-Dee is ideal for motorists. It cleans greasy, grimy hands without water. By keeping a can in your car you can clean your hands after any repair no matter how far you are from soap and water.

Garage men, auto supply stores and hardware dealers tell us Spee-Dee is the best seller they ever handled. Its new form—its instant effect—its many uses have made it a wonderful success right from the start. One small town dealer in Illinois sold one hundred cans the very first week.

And it's a big repeater! One customer bought one can to try—and the next day returned for seven cans for seven friends. That's how well it "takes" the moment its merits are seen.

SPEE-DEE

Makes a "Big Hit" With Every Motorist, Mechanic and Housewife



Spee-Dee—through sheer merit—should be in every automobile, in every shop, in every home.

It does more jobs—and does them quicker and better—than any other cleanser. It removes grease, tar, paint, ink, soot and dirt of every description from hands, clothing, carpets, rugs, etc. It also cleans painted and enameled walls, tile and wooden floors, sinks and bathtubs. And it's a big help in the family washing.

Spee-Dee is gritless, harmless and simple to use. For sale at auto supply stores, garages and hardware stores. Big 27 oz. can retails at 15c.

DEALERS—Spee-Dee costs you per case (3 *doz. cans*) $3.75. *Retails at* $5.40—15c *per can.*

Made only by

STATES CHEMICAL CO.

657 West Austin Ave. **Chicago Ill.**



Free Case Offer

States Chemical Company
657 W. Austin Ave., Chicago.

Gentlemen: Kindly send me free sample can of Spee-Dee and full particulars regarding your one case free introductory offer to dealers.

Firm Name.....

Address .....

My Name.....

M.W.1-17

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Are You Looking For A Bigger Battery Business

Then You Should Handle the

VESTA DOUBLE LIFE STORAGE BATTERY

Vesta actually does last twice as long as other batteries. The Vesta Indestructible Isolator—an exclusive, patented Vesta feature—*locks the plates apart*, prevents short circuits and positively doubles the span of battery existence. No other battery can use the Vesta Indestructible Isolator.

It stands to reason that motorists want this battery that has double life and consequent double economy and double satisfaction. The life of an ordinary battery is only about a year—it dies while the car is comparatively new; replacement is necessary. This replacement business can be yours with the Vesta. Our advertising in Newspapers and National Publications is daily pointing out the advantages of the Vesta.

Vesta dealers are monopolizing the battery business in their territories. Not only that but they are building up reputation and prestige that cannot be attained with any other battery. The satisfaction an owner derives from the Vesta makes him a lifelong friend of the dealer who sells it.

Vesta Accumulator Company, 2103 Indiana Ave., Chicago, Ill.

SERVICE STATIONS EVERYWHERE

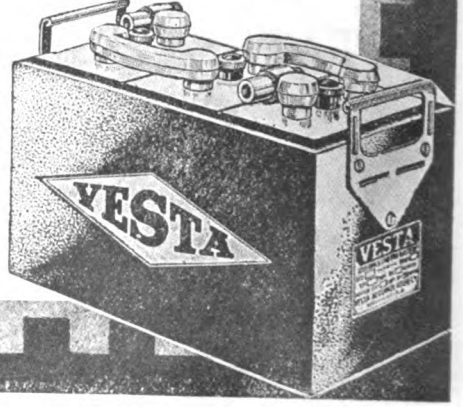
DEALER'S COUPON

VESTA ACCUMULATOR CO., 2103 Indiana Ave., Chicago, Ill.

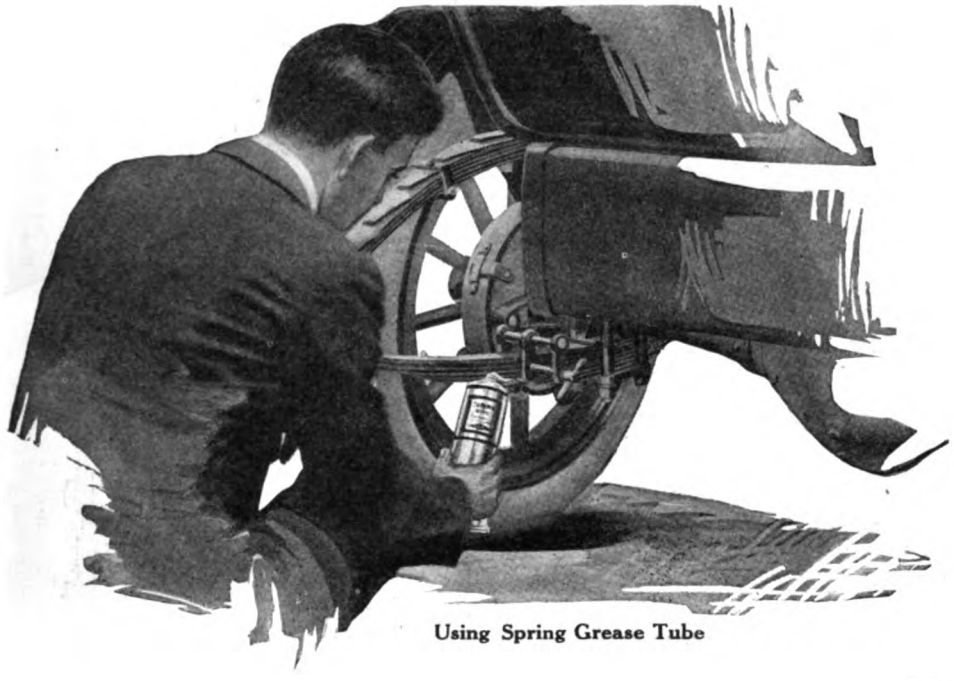
Please send information on the VESTA DOUBLE LIFE STORAGE BATTERY and your SERVICE STATION PLAN.

Name .....

Address .....



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Using Spring Grease Tube

NOTICE:

Owing to the impossibility of securing suitable space at the Chicago Automobile Show, our display will be held in the foyer of the Auditorium Hotel.

A profitable specialty because it repeats and turns money over quickly

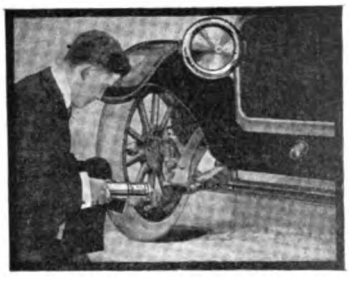
Motorists buy it over and over again because they like its quality, convenience, cleanliness and economy.

GREASE-in-TUBES is an easy seller. Even the first sale is easy because Crew Levick National advertising is doing the missionary work.

GREASE-in-TUBES has the full backing of this fifty-five year old organization—the very oldest and one of the very largest of the world's oil producers and manufacturers of petroleum products.

There are four different kits to meet every motoring need—the LINCOLN HIGHWAY KIT, containing one tube each of cup and spring grease and gear compound—as well as three separate kits containing three tubes each of any one of the three greases. The kits retail at a dollar each. The jobber and dealer discounts are very liberal.

Responsible dealers wishing to take advantage of the exceptional merchandising plans now in operation on this and other Crew Levick specialties are invited to communicate at once.



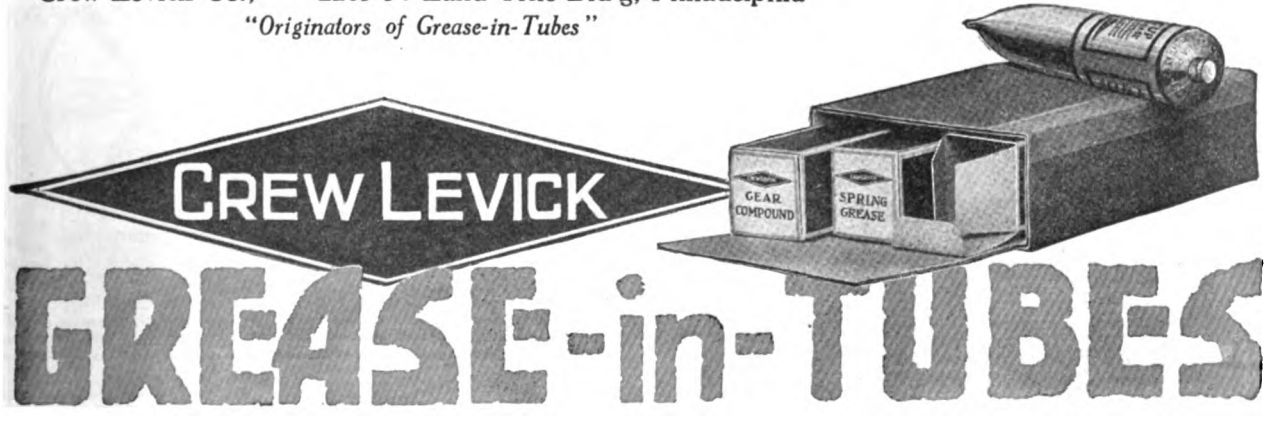
Using Cup Grease Tube



Using Gear Compound Tube

Crew Levick Co., 2203-31 Land Title Bld'g, Philadelphia

"Originators of Grease-in-Tubes"



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SPARTON

See The New Sparton Vacuum Gasoline System At The Chicago Show

This new Sparton quality product was the subject of much enthusiastic comment at the New York Show, where it was first introduced. Automobile men and engineers immediately saw that it marked the perfected development of the vacuum principle of supplying the carbureter with plenty of gasoline.

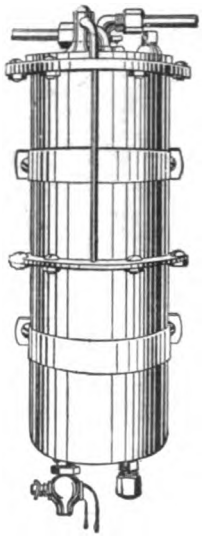
The Sparton Vacuum Gasoline system has been perfected by exhaustive tests made over a period of years and under all kinds of varying conditions. It is made of the best materials and expertly constructed in every detail.

Made by the Sparks-Withington Company, manufacturers of the famous Sparton Motorhorn, radiators and fans—products recognized as standards of quality throughout motordom.

See this new Sparton device and a complete line of Sparton products, including the famous Sparton Motorhorn, in spaces 125-130 Coliseum Annex at Chicago.

Sparton Motorhorns are used as standard equipment on 42 leading cars, including

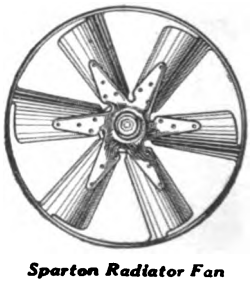
Packard	White	Marion-Handley
Chalmers	Marmon	Mercer
Winton	Cole	Peerless
Stutz	Haynes	Jordan
Kissel	Pathfinder	Briscoe
Hudson	Owen Magnetic	National
Studebaker	Jackson	And 22 others



Sparton Vacuum Gasoline System



Sparton Honey-Comb Radiator

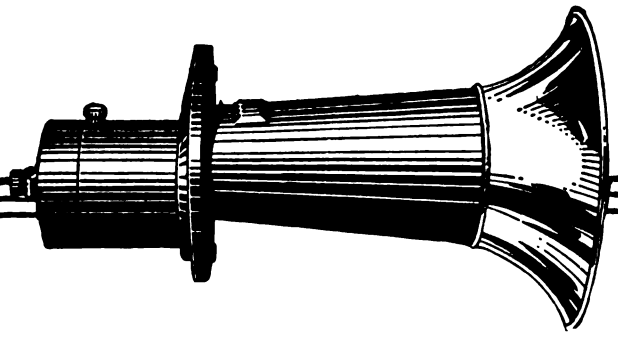


Sparton Radiator Fan

The Sparks-Withington Co.

Jackson, Michigan - - - U. S. A.

(4)



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"The Oil That's Clean"



Measures up to requirements of all motors

Tiolene

"The Motor Oil That's Clean"

No dealer or user of oil can afford to overlook

QUALITY

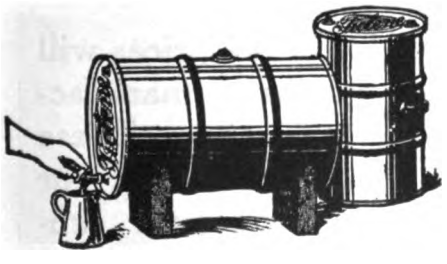
when buying his supply for 1917. The Steel Drum is a complimentary feature with Tiolene, 55 and 31 gallons. Also put up in 1 and 5-gallon cans. Address your nearest distributor today for full information, or use the coupon.

TIOLENE DISTRIBUTORS

General Automobile Supply Co.,	New York City,		Detsch & Co.,	Washington & California,	
Cornplanter Refining Co.,	Nashua & Manchester,	N. H.	R. McC. Bullington & Co.,	Richmond,	Va.
Richards & Conover Hdw. Co.,	Kansas City,	Mo.	H. M. Rhea,	Chambersburg,	Pa.
Richards & Conover Hdw. Co.,	Oklahoma City,	Okla.	The Banner Tire & Supply Co.,	Cleveland,	Ohio
H. Channon Company,	Chicago,	Ill.	The Columbia Auto Supply Co.,	Washington,	D. C.
Doherty Sheerin & Co.,	Indianapolis,	Ind.	Pacific Implement Co.,	San Francisco,	Cal.
Jackson Motor Supply Co.,	Pittsburgh,	Pa.	Peaslee-Gaulbert Co., Inc.,	Louisville,	Ky.
Robertson Hdw. & Steel Co.,	Portland,	Ore.	Marcus & Bailey,	Denver.	Colo.
Joseph Strauss Co., Inc.,	Buffalo,	N. Y.	The Automobile Equipment Co.,	Detroit,	Mich.
Treman, King & Co.,	Ithaca,	N. Y.	Janney Semple, Hill & Co.,	Minneapolis,	Minn.
H. L. Hadden Co.,	Milwaukee,	Wis.	Cook Iron Store Co.,	Rochester,	N. Y.
Burhans & Black, Inc.,	Syracuse,	N. Y.	Lee, Colt, Andreesen Hdw. Co.,	Omaha,	Neb.
N. M. Townley, Jr.,	Paterson,	N. J.	Union Hardware Co.,	Los Angeles,	Cal.

FOREIGN REPRESENTATION

Canadian Selling Co.,	Montreal, Que., Can.
The Chapin Co.,	Calgary, Alta., Can.
Santiago A. Panzardi,	San Juan, Porto Rico.
W. A. Dettmann,	Rocky Point Road, Arncliffe, N. S. W.
Crystal Oil Co.,	Barcelona, Spain; Milan, Italy.
Eddie E. Johnston,	Belize, British Honduras.
Handel En. Industrie Mij. M. Adler,	Amsterdam, Holland; Dutch E. Indies
J. Didier & Co.,	Lyons, France.
J. Roberts & Son,	Newmarket, Auckland, New Zealand.
Leon & Company,	Santo Domingo.
Mario C. Nogueras,	Havana, Cuba.



TIONA OIL COMPANY

Dept. A. M. 19 A. BINGHAMTON, N. Y.

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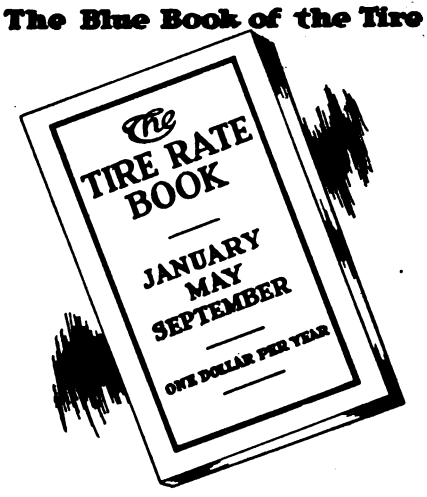
Suppose You—

were called on the phone and asked to quote price on a 35 x 4½ tire of a maker whose product you were not familiar with? Could you afford to waste your time, and the time of your customer, by hunting for that maker's price list—and maybe not being able to find it?

Certainly not!

For your convenience we have compiled the prices of all the leading tire manufacturers' products in a handy pocket size book (size 4¾ x 7½), and you will agree with upwards of 7500 dealers and tire salesmen that it is absolutely an indispensable aid to the successful conduct of the tire selling business.

"The Blue Book of the Tire Trade"



In addition to all of these revised pneumatic and solid tire listings The Tire Rate Book includes fourteen pages of car listings (all models from 1913 up to and including 1917) with accurate information bearing upon tire and rim sizes.

If you want tire size and rim style of the Alco, 1913 model, it is in The Tire Rate Book. Every other make (whether it is active or obsolete) is there. The information may be worth dollars in profits to you every day.

Other features are the "Standard Telegraphic Code," inflation tables, a table of metric sizes and their equivalents, etc., etc.

Important changes in tire prices will be announced by many manufacturers on or about Jan. 6th. These changes will all be featured in our January edition. Send your subscription now.

Order by Coupon or by Letter

The Tire Rate Book (Published by Motor World),
239 W. 39th St.,
New York City.

Enclosed please find $..... for ..... subscriptions, beginning with the January, 1917, issue.

Name .....

Address .....

Subscription price, 50 cents per year—January, May and September issues.

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Increase the Efficiency of Your Shop

You can make repair work pay and get all the profits by installing

MANLEY

Highly Specialized Equipment for Garage and Auto Work

Designed to meet every-day garage conditions—this is the Manley specialty—EQUIPMENT, without which no shop can properly handle even the average work which comes in—EQUIPMENT, which speeds up the repair work, getting more done in the same time with the same force—therefore a tremendous profit maker for the garage.

THE Manley SHOP AND GARAGE EQUIPMENT

THE MANLEY UNIVERSAL AUTO PRESS

Capacity 22 tons.....42 in. clearance



Specifications.

Upper Press takes work 18½ in. wide x 19 in. under screw. Lower Press 42 in. wide x 21 in. between tables. Maximum length under screw 46 in. Hand wheel 14 in., threads in nut 3½ in. long. Built of heavy 5-in. channels throughout. Weight 450 lbs. Total height 70 in. Floor space 46 in. x 30 in.

Price Complete, $55.00.

A Press Is a Necessity and Used Continuously.

A powerful press is now recognized as a necessity in every Garage, large or small. But unless the Press has the necessary capacity both in pressure and clearance to handle every piece of work which must be done, it is of little use. The Manley Press has both, and in addition it has

Other Features found in no other press, which are of vital advantage for Garage work.

These Features Are:

1st. HIGH SPEED leverage of 1000 to 1 for ordinary work (ten times quicker than a ratchet).

2ND. HIGH POWER leverage of 2200-1 to 5000-1 for extraordinary work. (Tremendous power—little effort.)

Screw may be struck a blow under pressure with no damage to Press. (Equal to a hydraulic Press.)

42-IN. CLEARANCE. This clearance is necessary, look around and satisfy yourself that it is.

LOWER TABLE instantly adjustable on pins (no bolts to remove, no danger to workman).

BOTH TABLES have wide faces to properly support the work.

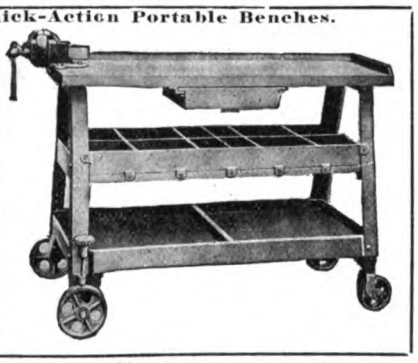
SCREW 2 in. diameter 4 pitch square thread, 12 in. travel. It does not revolve.

CHANNEL BLOCKING, properly braced (will not crush).

"V" Plate which automatically adjusts itself to any size arbor, mandrel or shaft.

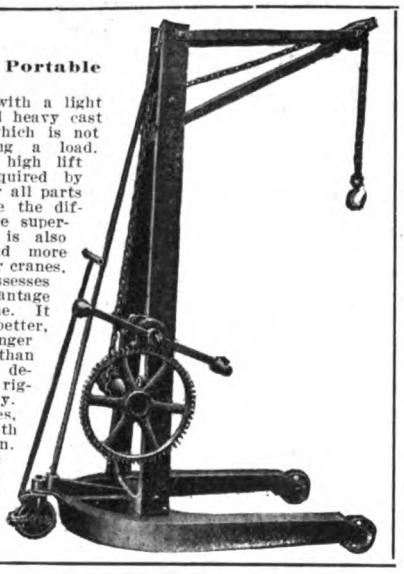
Manley Quick-Action Portable Benches.

Take these benches to the car with all the necessary tools, parts, etc. They are the most used pieces of equipment in the garage. They are never idle. No. 1 Bench (shown in cut) for use all over the garage, for light work. No. 2 Bench is for heavy work. To be used in the repair shop right at the car, saving hundreds of steps to the stationary benches. Wheels can be locked. Price, No. 1, $27.50; No. 2, $47.00. Vises, extra.



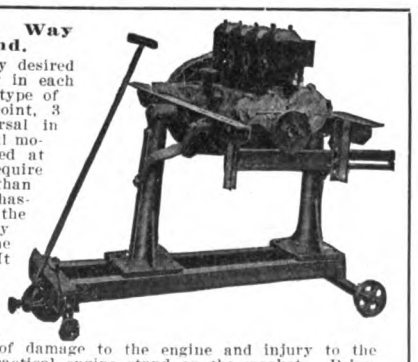
Manley Hilite Portable Cranes.

The only Crane built with a light steel superstructure and heavy cast iron base. A Crane which is not topheavy when carrying a load. It makes possible the high lift and deep overhang required by garages to properly clear all parts of the car and to raise the different parts free of the superstructure. The Crane is also lighter, less bulky and more easily handled than other cranes. In addition to this, it possesses other features of advantage found in no other crane. It will handle your work better, quicker, with less danger and with less labor than any other method yet devised. It requires no rigging and is always ready. Built in three capacities, 1, 1½ and 2 tons, with any lift from 6 ft. 6 in. to 9 ft. 6 in. Average garage size, 1 ton capacity, 7 ft. lift. Price, $66.00.



Manley Every Way Engine Stand.

Holds an engine in any desired position. Locks rigidly in each position. Mounts any type of motor suspension, 4 point, 3 point or Ford. Universal in all its adjustments. All motors must be overhauled at regular intervals and require more accurate work than any other part of the chassis. This stand allows the workman to get at any part easily and to the greatest advantage. It therefore promotes better, quicker and more accurate work. It makes engine repair work a pleasure and eliminates the danger of damage to the engine and injury to the workman. The only practical engine stand on the market. Price, stationary, $32.00; price, portable, $47.00.



UNITED ENGINE & MANUFACTURING CO., Hanover, Pa. Chicago Show—Space 6-B Coliseum

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THE STAMP OF APPROVAL

of Twelve Great Automobile Engineers—and What It Means to the Dealers

Since the last Warner-Lenz advertisement in Collier's and The Saturday Evening Post of January 6th, four new names have been added to the list of famous cars now using Warner-Lenz as standard equipment. These are White, Pathfinder, Doble Steam and Peerless. Previously we had announced the Packard, Marmon, Stutz, Singer, McFarlan, Hal, Ohio Electric and Daniels Eight.

Over 300,000 pairs of Warner-Lenz have been sold through our dealer organization to individual owners of cars.

Warner-Lenz have been adopted by the big manufacturers for one sole reason—this invention, to their minds, has solved night driving problems. Ordinary lenses would and do cost less—but the engineers of these companies insist on the best.

NON-GLARE

Drivers are equipping their cars with Warner-Lenz so as to do away with the dangerous glare and the weak dimmer. This popularity extends all over the United States.

IF THESE BIG COMPANIES ARE SPENDING MONEY TO EQUIP ALL OF THEIR CARS WITH WARNER-LENZ AND OVER 300,000 OWNERS HAVE ALREADY BOUGHT, ISN'T IT A FINAL REASON FOR YOUR HANDLING WARNER-LENZ AND SHARING THE PROFITS?

For every month during the Spring and Summer we have planned big page advertisements in Collier's and The Saturday Evening Post. Their combined circulation is nearly 3,000,000. We spent $100,000.00 last year for advertising. During 1917 we will spend $200,000.00.

Motorists all over the country have read and are reading of Warner-Lenz. Many more would buy if they only knew where to get them locally. Hundreds come direct to us—some write for names of local dealers.

YOU CAN WIN

Every owner of a car in your community is a prospect. Warner-Lenz are bound to be universal.

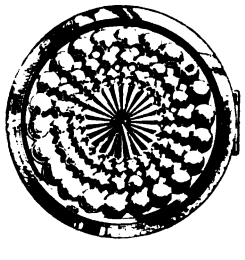
It only takes a couple of minutes to insert Warner-Lenz in the lamps and there is no future service necessary. Every sale you make creates a booster. He tells others.

All laws favor Warner-Lenz. Wherever tested, they are given the O. K. of police authorities.

Warner-Lenz sales have just started. We want good dealers in every city in the country who will help us in the distribution. Let us tell you what some of our dealers are making. You will be surprised.

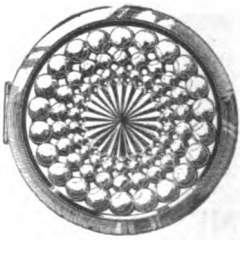
Write for our proposition today. Full particulars will be sent by return mail.

Packard TWIN-6
MARMON
STUTZ
HAL TWELVE
McFARLAN SIX
OHIO ELECTRIC
DANIELS EIGHT
White
Pathfinder
DOBLE STEAM CAR
Peerless



WARNER-LENZ

907 S. Michigan Ave., Chicago



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?

Is a Badger Jack Worth While?

There's only one answer. If you've ever been caught with a flat tire, out on the road, you know that when you do need a jack you want one that works.

Three-fourths of the trouble and delay in tire changing is due to cheap, inferior jacks. Rims, wheels and tires have been perfected until they cause little bother. But the average jack in the tool box isn't worth its weight in scrap. It can't be. For a jack that works, and works all the time, can't be made for 42 cents.



That is the one fact we want to impress. A good jack *is* worth while. It will save hours of time in the end, and four dollars' worth of exasperation every time you change a tire.

You'll never know how easy tire changing can be made until you're acquainted with Badger Jack. He'll make you feel the way he does about the limp-backed, lady-footed junk-jacks you've been worried with all these years.

There are eight Badger Jacks in the family, from the big, husky, five-ton truck jack down to little junior jacks. And they're all tough-muscled lads that will lift a corner of anything on wheels. They're flat-footed. No car ever slips off a Badger Jack. Just tuck his shoulder under the axle. Any kind of toe-hold will do for that ground-gripper foot of his. A few short, *easy* strokes and your car is up to stay. Note the emphasis on *easy*. Never a lame arm hoisting a car with a Badger Jack.

Get acquainted with Badger Jack. You'll save a lot of time and trouble. There's a book about this family of Badger Jacks. It's called "The Story of a Jack." Write for it. If you're interested in motor cars you will be interested in it.

Walker Manufacturing Company
420 Wisconsin Street, Racine, Wis. (31)

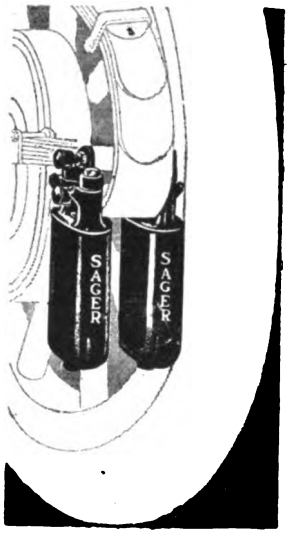
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PROFITS FROM The SAGER Line

SAGER products sell easy. They sell because of their low price and their high reputation, which is constantly growing because of their uniformly good quality and efficient service.

SAGER Twin Shock Absorbers

are guaranteed to give satisfaction or money refunded. They are simple and durable; easily attached to all widths of spring without machine work. No extra parts required. Made from drop forgings, 6 in. springs, crucible steel, with 2½ in. action. Oil cups exclusively designed. Price, $12.50. With yoke, $15.00. (For spring suspensions as Hudson, Chandler, Chalmers, etc.)



SAGER Equalizing Springs



the only shock absorber applicable to cantilever springs with which 50% of the new 1917 models are equipped. The SAGER Equalizing Springs are adapted to any car having medium or light weight flat springs.
They are highly efficient in preventing abrupt recoils and have proved their superiority during 12 years of widespread application. Price, set of four, $20.00; single pair, $12.00.



Sager Bumpers
(with concealed spring to absorb shock)
Fit All Bumpers
(Patented Dec. 12, 1916.)

Sager Diamond

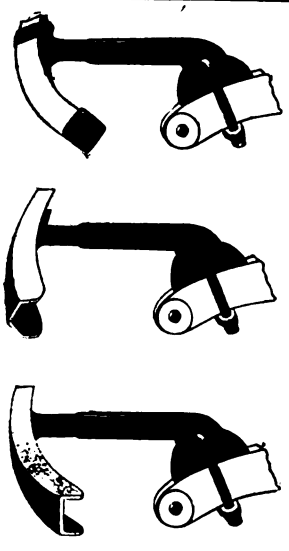
No. 40, frame castings, black; front castings, nickel; 1¼ bar, black; price, $10.00.
No. 41, frame castings, black; front castings, black; 1¼ bar, nickel; price, $12.00.
Add $3.00 to above list for 1½" Diamond or Round bar.

Sager Duplex

No. 42, frame castings, black; front castings, black; bar, black; price, $10.00.
No. 43, frame castings, black; front castings, black; bar, nickel; price, $12.00.

Sager Channel

No. 44, frame castings, black; front castings, black; 2" channel, black; price, $10.00.
No. 45, frame castings, black; front castings, black; 2" channel, nickel; price, $12.00.
Note—All bars interchangeable.



Sager SpringSteel Bumper

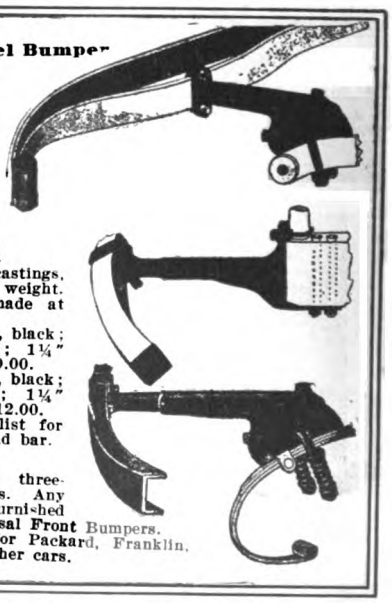
Universal—Takes the smash or bumps and springs back to its original position without damage to car.
No. 70, frame casting, black; 2" bar, black; price, $11.00.
No. 71, frame casting, black; 2" bar, nickel; price, $13.00.

Franklin Special

Reinforced frame castings, very strong, yet light weight. Attachment quickly made at top and bottom.
No. 60, frame castings, black; front castings, nickel; 1¼" tube, black; price, $10.00.
No. 61, frame castings, black; front castings, black; 1¼" tube, nickel; price, $12.00.
Add $3.00 to above list for 1½" Diamond or Round bar.

Rear Bumper

Can be attached to three-quarter elliptic springs. Any type of bar will be furnished at same list as Universal Front Bumpers. Special rear bumper for Packard, Franklin, Pierce, Cadillac and other cars.



J. H. SAGER COMPANY, Rochester, N. Y.

36 So. Water St.

See Our Exhibit at the Chicago Show Space

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Attracting Attention

Did you see the three "SPECIAL BUILT SAXON RACEABOUTS" at the New York Show? If you were at the Show you saw them. You could not have missed seeing them if you wanted to. You might have inquired regarding the whereabouts of different makes of cars from salesmen who were in attendance at the Show. As a rule they were doubtful just on which floor you might find the car you were looking for. You would be told it was either on the 2nd, 3rd or 4th, or probably the 1st, all of which you will say was "fine business."

This condition was not true of the three Saxon Raceabouts in colors which spoke for themselves. There was not a colored porter at any of the booths but that could tell you quickly, definitely, and to the point, just exactly where those raceabouts were. Even the ex-bartenders acting as waiters in the cafe would take time between wrangling over distribution of tips to tell you those Saxon Raceabouts certainly were "Big Time."

We claim this type of car gets you advertising and gets it at a low figure. We claim those raceabouts create interest in people's minds regarding Saxon Cars, where previously there was little or no interest. We believe that chasing those cars up and down Broadway and Fifth Avenue in the afternoon and evening brought the name Saxon forceably to the minds of more people and created a more favorable impression for the Saxon Line than could have been accomplished by almost any other means. We believe that in New York the Saxon received more real interest creating advertising the five days those cars were there than it received in the last five months, the Show excepted.

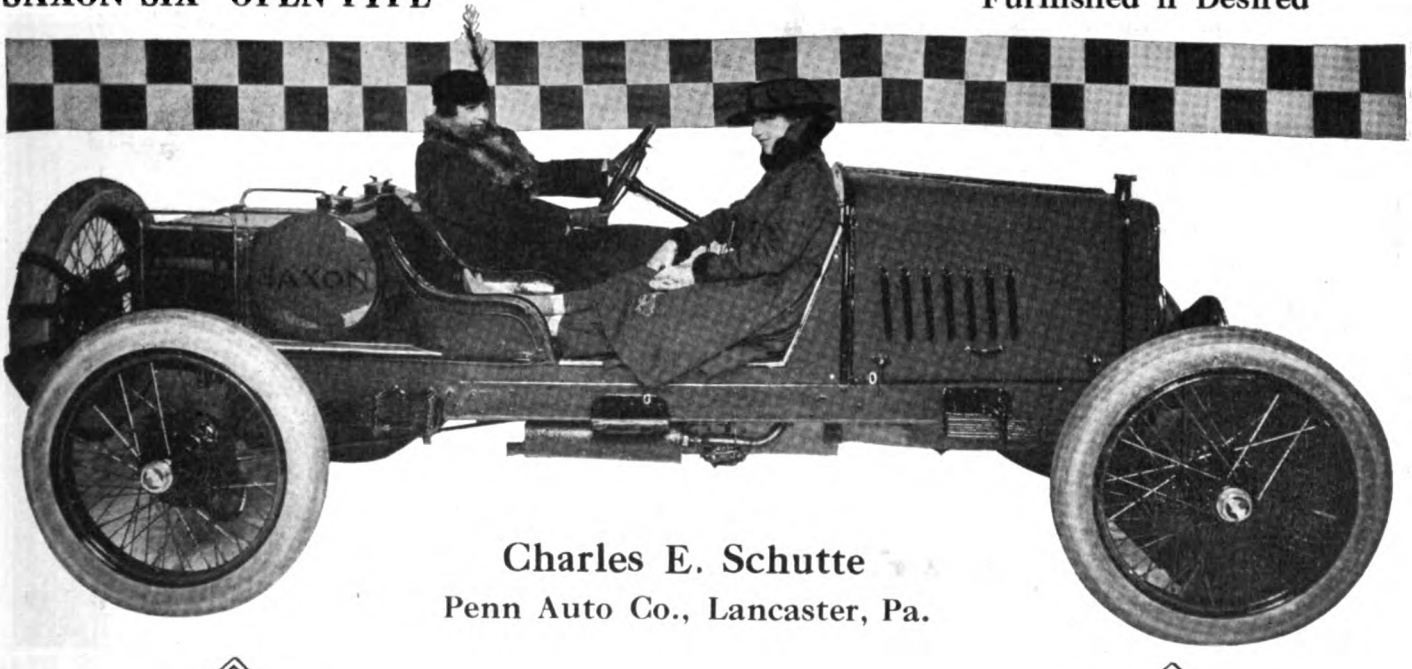
We are aware as well as yourselves that about 95% of your prospects do not buy raceabouts when they purchase a car. However, you would not strenuously object to a prospect carrying in his mind's eye the likeness of that good-looking, attractive raceabout while he is making a deposit of $100 on a regular model touring car, after being assured the only difference was in the style of the body.

It looks as if you were beginning to catch the drift. Keep on "drifting." You may see the point most any time now and say—"Well, I guess he is right." Then you will drop the matter, having really been alive for a total of thirty seconds, and again return to the system of waiting for people to come and take cars away from you. All of which is "Fine Business."

Strange as it may seem, our facilities are very good for turning out these bodies in quantity. We send photographs and full information to those dealers who feel they want it, need it, and must have it. If the demand is sufficient to warrant it, we might be induced to make this equipment for a few other good makes of cars.

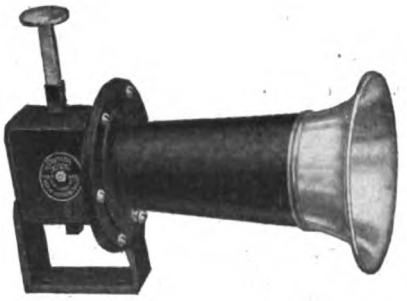
SAXON SIX "OPEN TYPE"

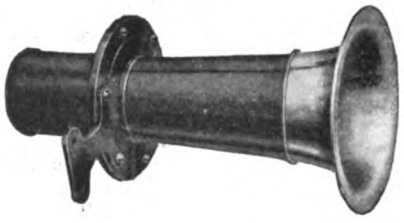
Fenders, Top and Wind Shield Furnished if Desired

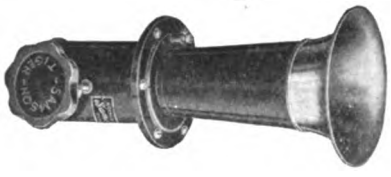


Charles E. Schutte
Penn Auto Co., Lancaster, Pa.

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AN OPPORTUNITY

To Turn Trade Knowledge to Profits for 1917
The Riding Public Insist Upon Having

Samson

AS RELIABLE, EFFICIENT WARNING SIGNALS

DO NOT OVERLOOK THIS DEMAND

Arrange now so that you will be in position to supply your trade and get your share of the business.

Our trade proposition is more attractive than ever.

A few of the many
SAMSON MODELS
Ask for Literature

Our line of horns is the most extensive on the market. You can fill any order for a horn with a Samson Model. We furnish attractive sales helps and literature.

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will teach you the principle, construction, repairing and adjusting of all cars

A complete Ford Instruction is also added.

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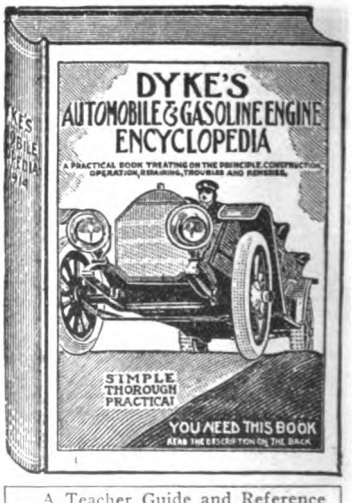
Step by step the book takes you through engine construction; 4, 6, 8 and twin six engines, carburetion, valve timing, ignition timing, and all up-to-date electric systems—repairing, adjusting, etc. The repair subject is very complete and extremely useful. Hundreds of illustrations on this subject alone.

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(1)—The Automobile.
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(3)—Steering, Springs Brakes.
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(7)—The Gasoline Engine.
(8)—Engine Parts.
(9)—Valve Timing.
(10)—Firing Order.
(11)—Six, Eight and Twelve Cylinder Engine.
(12)—Carburetion.
(13)—Carburetor Adjustment.
(14)—Cooling.
(15)—Lubrication.
(16)—Ignition: Low Tension Coil.
(17)—Ignition: High Tension Coil.
(18)—Spark Plug and Coil Troubles.
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(20)—A Review of Various Ignition Systems.
(21)—Low Tension Magnetos.
(22)—High Tension Magnetos.
(23)—Care of Magneto.
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(27)—Electric Generators.
(28)—Leading Electric Starting & Generating Systems.
(29)—Care of Electric Starting & Generating System.
(30)—Wiring of Electrical Systems.
(31)—Lighting a Car.
(32)—StorageBatteries
(33)—Electric Vehicles.
(34)—Operating a Car.
(35)—Rules of the Road
(36)—Care of the Car.
(37)—Accessories.
(38)—Insurance, Laws, License.
(39)—The Automobile Salesman.
(40)—Horse Power.
(41)—Tires.
(42)—Vulcanizing and Repairing Tires.
(43)—Digest of Troubles.
(44)—The Automobile Repairman.
(45)—Garage and Shop
(46)—Repairing.
(47)—Trucks.
(48)—Tractors.
(49)—Brief Treatise on Other Internal Combustion Types of Engines
(49a)—Ford Instruction



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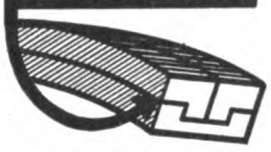
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The right-angle interlock is your safeguard



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This perfect three-piece construction justifies the name—EVER-TIGHT. Note how accurately the right angles fit together. Engineers and engine builders acknowledge that this is the only proper construction for safety and prevention of leakage.

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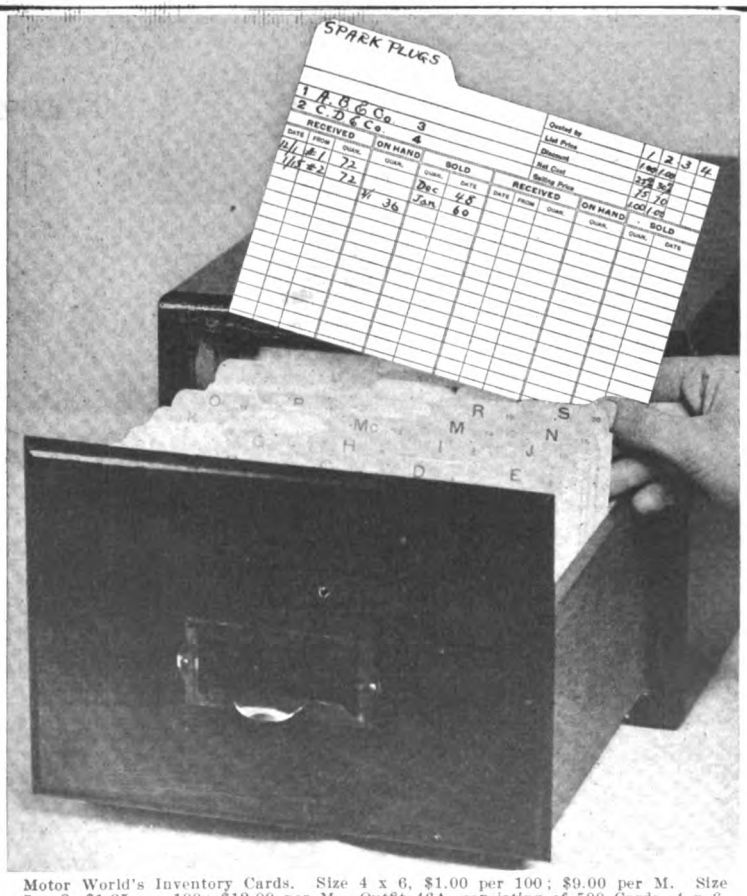
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For All Types of Transversely Split Rims

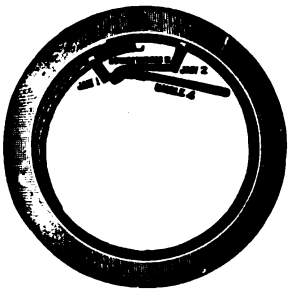
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A limited line, but quantity production of the few items gives high quality at a minimum cost.

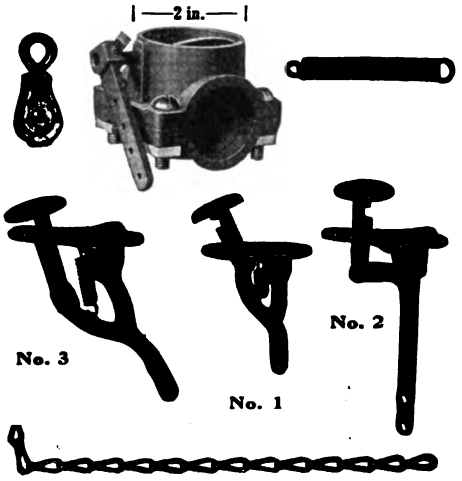
In addition to the Wheel Puller for Fords and the Cut-Out Outfit illustrated here, the line embraces Foot Accelerators and Cam Shaft Bearings for Fords, Chain and Galvanized Cables, Pressed Steel Pulleys, Cut-out Valves, Locking Foot Pedals and Fender Braces for Fords.



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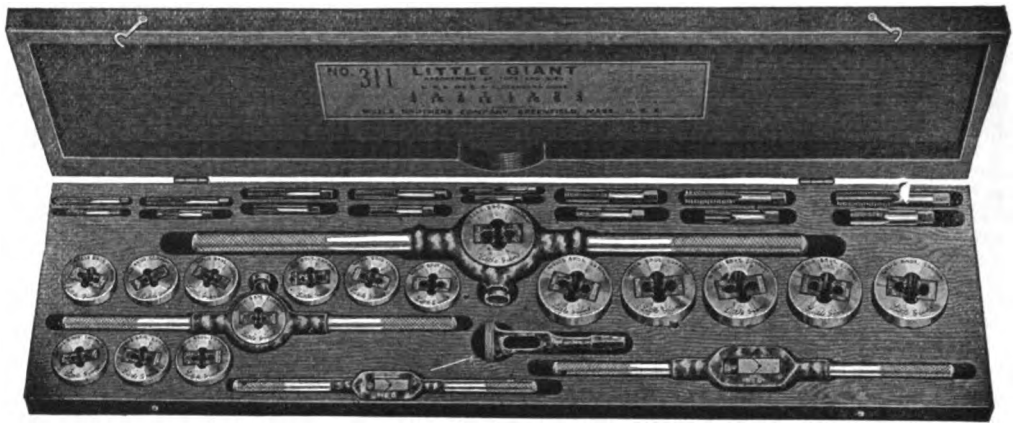
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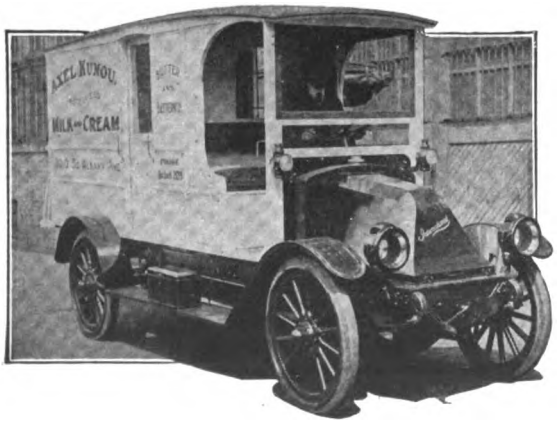
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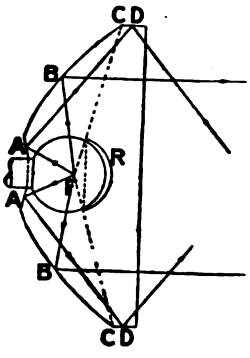
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A beam of light that conforms to all ordinances—that enables the driver to see everything nearby or at a distance—that reduces lamp cost and current consumption.



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Thus all of the light is made useful.

You can use the full power of the spot-light on a defined area without any glare outside. It is effective at all distances. It gives you a greater beam candle power per bulb candle power, consequently the lamp cost and current consumption are minimized.



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Diameter: 7 inches. **Body:** Heavy Steel Black Japan. **Main Reflector:** 6-inch Patented Parabolite, brass with heavy silver finish. **Auxiliary Non-Glare Reflector:** Brass highly silvered, firmly held in position—adjustable and easily attached when lamp is renewed. **Switch:** Cutler-Hammer, conveniently located in handle. **Focusing Adjustment:** Simple and positive. **Cord:** 5-ft. Duplex Cable. **Bracket:** Types for all cars. **Diminishing Mirror,** 4 inches. **Door:** Heavy Steel Black Japan with positive thumb screw lock. **Handle:** Knob type. **Lamp:** Nitrogen.

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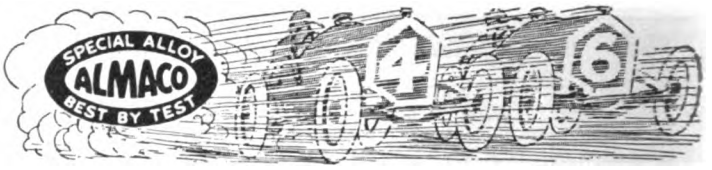
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Chicago Automobile Supply House
1349 Michigan Ave. Chicago, Ill.



"Makes a Four Run Like a Six"

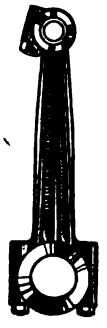
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Almaco Pistons and Rods weigh about one-third as much as cast iron or steel. They

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is a seamless tube of wire solder. The core is a soldering flux that flows as solder is used. CRYSTAL-CORE is especially adapted for AUTOMOBILE work. Tube is a series of cells. Each cell is filled with the proper amount of flux. Kester Crystal-Core Wire Solder is cheaper to use than solid wire or bar solder. No time is lost in preparing or applying the flux or acid.

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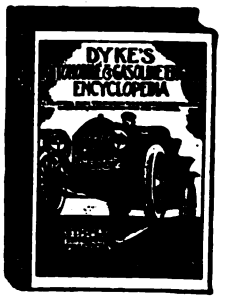
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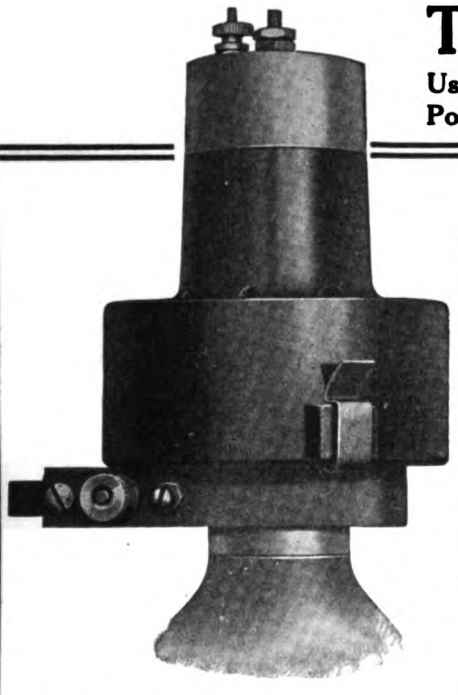
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Made in heavy khaki for shop use; imitation linen and Palm Beach for the Tourist. Protection from head to feet; plenty of pockets; cut on lines that eliminate strain; roomy; comfortable; serviceable; neat.

Each Garment Packed in Individual Carton.

We Sell Jobbers Only—Insist on Protexall

THE PROTEXALL COMPANY **Abingdon, Ill.**



The PITTSFIELD DISTRIBUTOR

Uses Current Only When Necessary To Produce Spark—Make and Break Positively Mechanical Operations—No Springs, Trips, or Hammers.

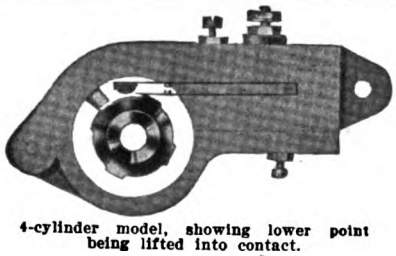
THE KEYNOTE OF THE PITTSFIELD BATTERY IGNITION SYSTEM is in the breaker mechanism of the Distributor.

As your breaking cam revolves it first forces the platinum points together (as illustrated); then, in the same cycle, it forces them apart. You will note that this action is entirely independent of springs, being positively and completely effected by the cams.

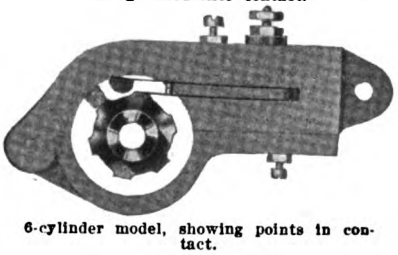
The contact is firm and certain, but of such short duration that current consumption is exceedingly small, although ample to produce hot sparks at speeds greatly in excess of the highest engine demand.

Lags—both electrical and mechanical—are practically eliminated, and the synchronization of timing is practically perfect.

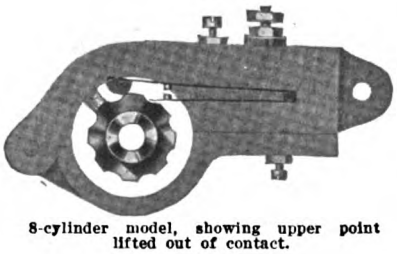
The whole outfit is compact, and made into a single unit, including the coil. The only external wire (except spark plug leads) is the lead to the battery.



4-cylinder model, showing lower point being lifted into contact.



6-cylinder model, showing points in contact.



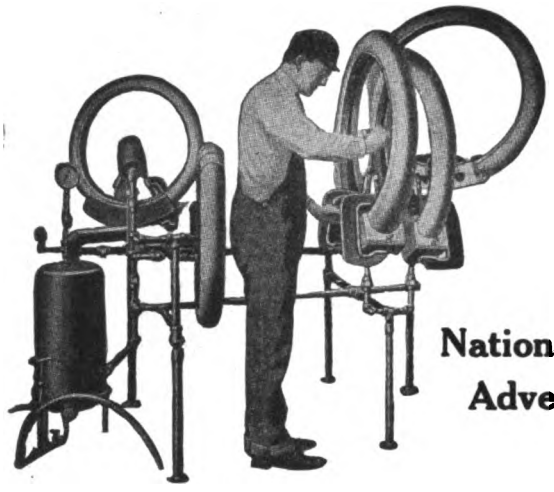
8-cylinder model, showing upper point lifted out of contact.

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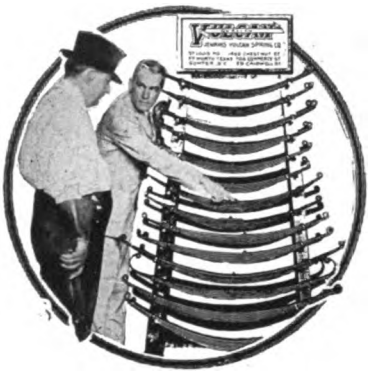
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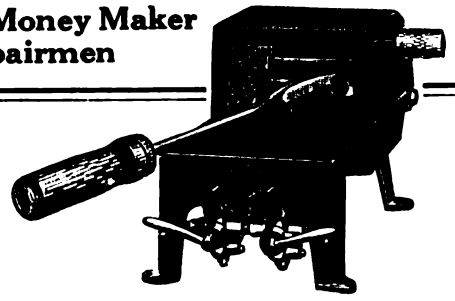
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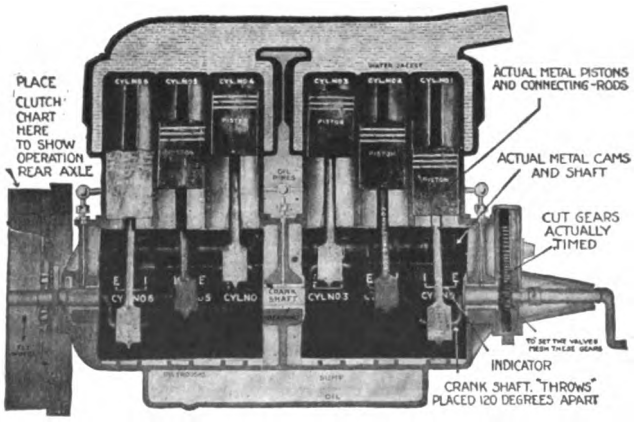
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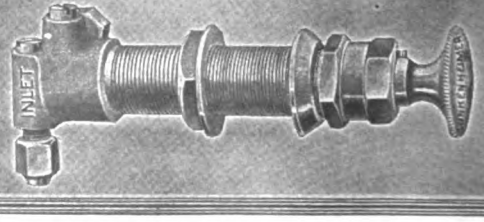
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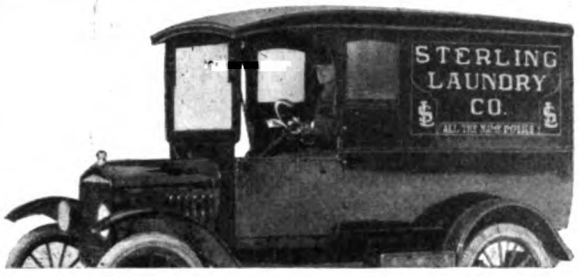
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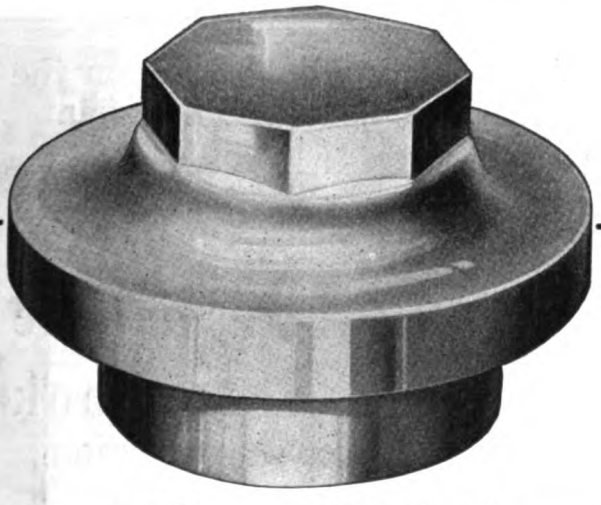
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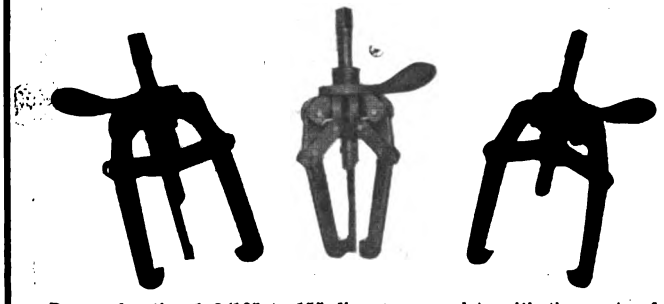
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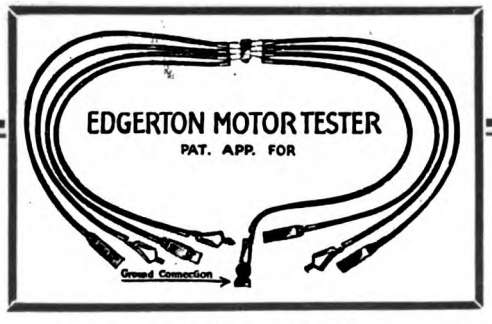
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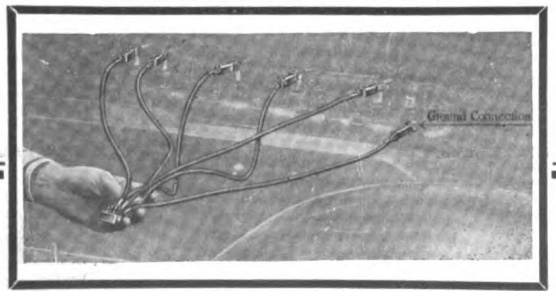
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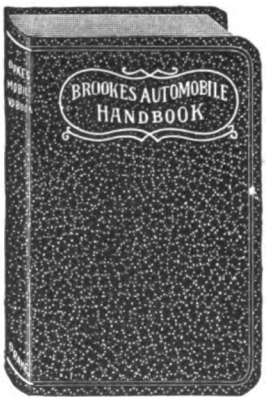
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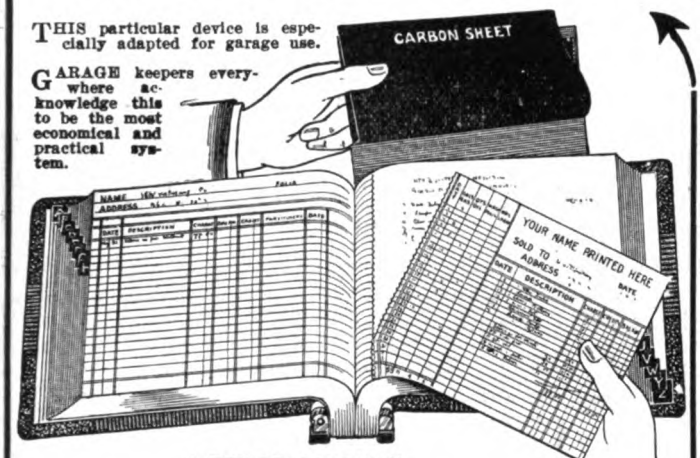
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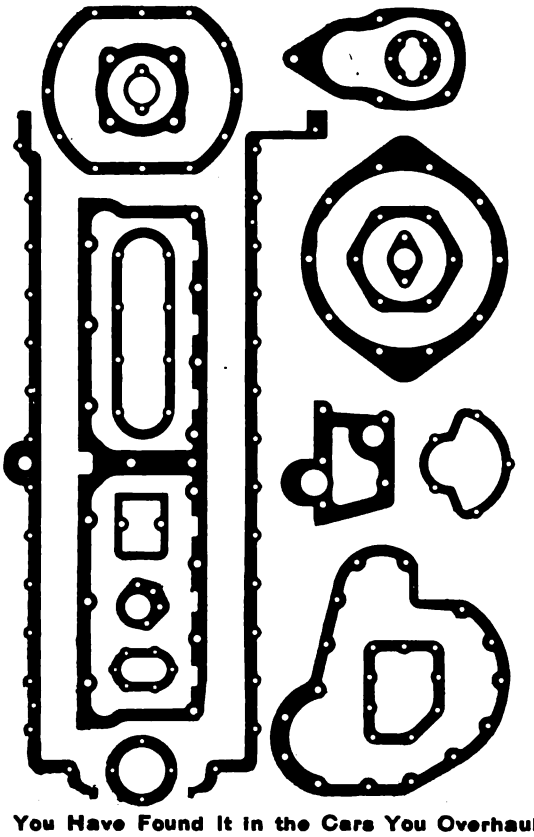
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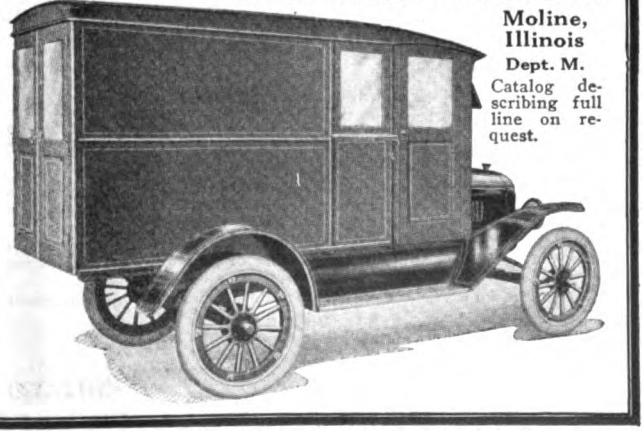
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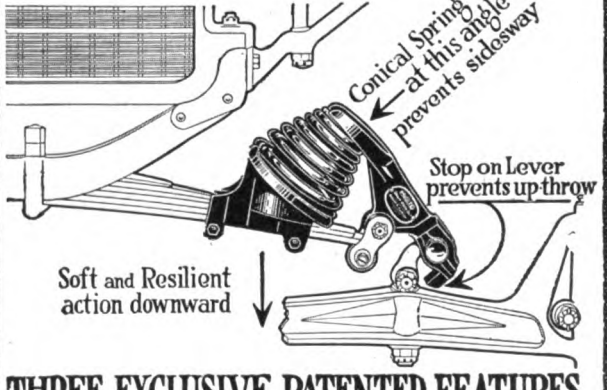
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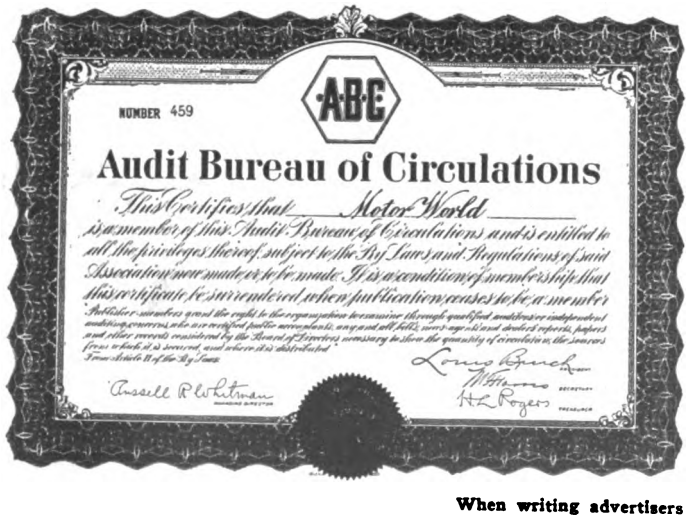
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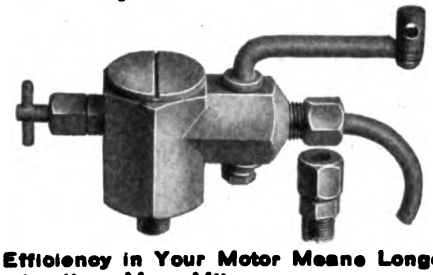
Locks in any position—indestructible. Every lock has different key combinations.

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PRICE $6.00 EACH

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Successors to Accessory Mfg. & Sales Company
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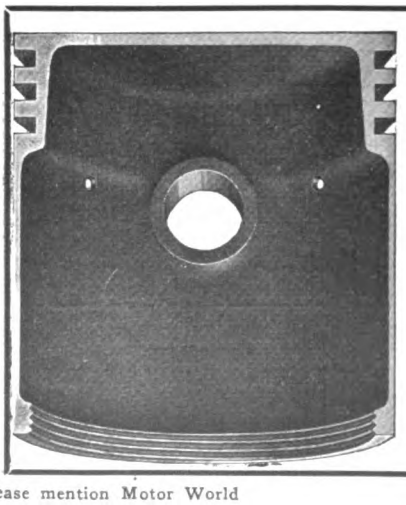
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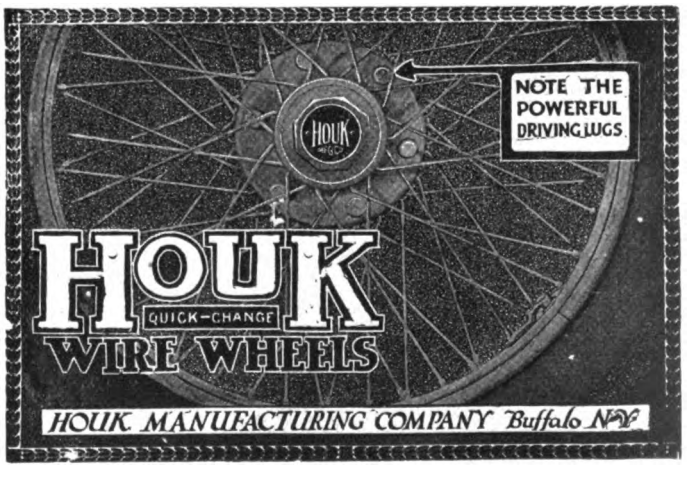
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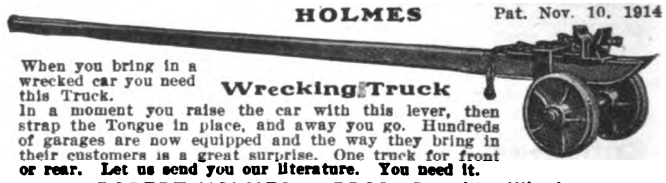
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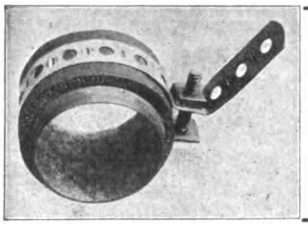


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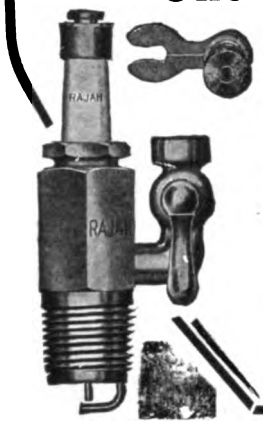
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A car combining highly developed mechanical features with such beauty of design and completeness in detail as to make it significant in any assemblage of cars.

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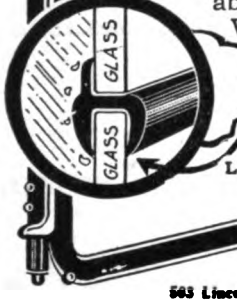
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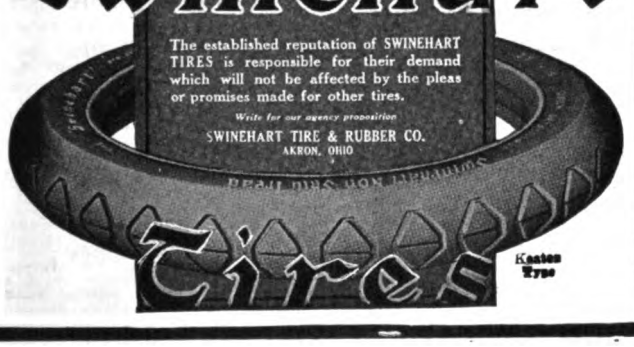
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Welch-Detroit
Reo 1910-1911—Regal 30
American Truck
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Peerless—Auburn 40
Stevens X—Franklin 6
Everett 4 and 6—Stratford—Krit 2 & 3 speed
Pope-Hartford
Oakland 24-25-33-40-42
Jackson 35 & 50
Cadillac, 1909, 1910, 1912
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Good Condition, Reasonable Prices

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Fresh Selected Stock—Standard Makes Guaranteed

	New Tires	New Tubes		New Tires	New Tubes
28x3	$ 6.00	$1.25	34x4	$13.25	$3.25
30x3	6.50	2.00	35x4	13.50	3.45
30x3½	8.00	2.25	36x4	14.00	3.50
31x3½	8.50	2.50	34x4½	16.25	4.00
32x3½	9.00	2.50	35x4½	17.00	4.15
34x3½	9.50	2.55	36x4½	17.50	4.25
36x3½	10.75	2.75	37x4½	18.00	4.26
31x4	11.75	2.90	35x5	17.50	5.00
32x4	12.50	3.20	36x5	18.50	5.00
33x4	12.75	3.25	37x5	20.00	5.20

For Non-Skid add 10% to All Prices.
Special Bargains in Slightly Used Tires.

	Used Tires	Used Tubes		Used Tires	Used Tubes
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30x3½	4.25	1.45	36x4	7.50	1.75
31x3½	4.50	1.50	34x4½	8.00	1.75
32x3½	5.25	1.50	35x4½	8.00	1.80
34x3½	5.50	1.60	36x4½	8.25	1.85
31x4	6.25	1.65	37x4½	9.50	1.90
32x4	7.00	1.60	35x5	8.50	2.00
33x4	7.25	1.70	36x5	9.50	2.00
34x4	7.75	1.70	37x5	9.75	2.20

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There's no need now to send out two men on ordinary towing jobs, or to ask owners in trouble to sit in their cars and drive them in at the end of a rope. The SLOAT One-Man Tow Bar tows any driverless Ford car, over any kind of roads, around corners, and into doorways, and prevents collision at stops.

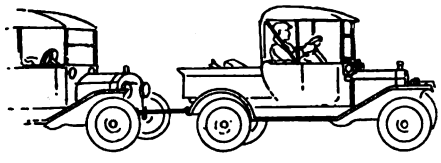
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Pays for Itself in New Business

Dealers using the SLOAT One-Man Tow Bar get preference from owners of disabled cars. Investment quickly earned back in time and labor saved, and in paying new business.

Write for details and price.

E. R. SLOAT

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Special Finish

Grease Cup

Patented

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Pleasing in design, larger grease capacity, better threads and a longer and stronger shank.

The chief feature of the new cup is our "Special Finish" which

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Advertisers' Index

Adamson Mfg. Co. 100
Ahlberg Bearing Co. 152
All-Season Body Co. 156
Allen-Curtis Co. 252
Aluminum Mfg. Co. 242
American Ball Bearing Co. 259
American Bronze Co. 78
American Electric Co. 236
Ames Co., F. A. 251
Amplex Electric Co. 185
Atwater Kent Mfg. Works 94-95
Automobile, The 252
Auto Accessories Co. 203
Auto Parts Co. 191

Backus Novelty Co. 251
Bayerson Oil Works 136
Bay State Pump Co. 133
Benford Mfg. Co. 250
Black & Decker Mfg. Co. 202
Bobbe & Co., A. 238
Bosch Magneto Co. 252
Bound Brook Oil-less Bearing Co. 158
Brown-Lipe-Chapin Co. 180
Brunswick Motor Car Co. 252

Caskey-Dupree Mfg. Co. 168
Cassidy Co., E. A. 225
Chalmers Motor Co. 198-199
Champion Ignition Co. 245
Chase & Co., L. C. ..... 113 to 116
Chicago Automobile Supply House 242
Chicago Solder Co. 242
Clark Gas Power Co. 206
Collison, George A. 248
Commerce Motor Car Co. 118-119
Commercial Truckmobile Co. 164-165
Connecticut Telephone & Electric Co. 188
Cox Brass Mfg. Co. 208
Curtis Pneumatic Machinery Co. 237

Dann Products Co. 109
Delion Tire & Rubber Co. 252
Denver Traffic & Signal Co. 253
Detachable Limousine Co. 253
Detroit Battery Co. 253
Detroit Piston Ring Co. 170
Detroit Starter Co. 117
Disco Electric Starter Co. 250
Dort Motor Car Co. 144
Drake & Co., Frederick J. 248
Durkee-Atwood Co. 181
Dyke, A. L. 246

East Palestine Rubber Co. 237
Eclipse Mfg. Co. 129
Edgerton & Co., R. G. 248
Eisemann Magneto Co. 247
Electric Appliance Co. 124
Elgin Motor Car Corp. 207
Elkhart Carriage & Motor Car Co. 264
Emerson Motor Co. 130-131
Eureka Rim Compressor Co. 111
Ever-Tight Piston Ring Co. 238

Faw & Co., J. H. 253
Fedders Mfg. Co. 166
Fibre Finishing Co. 249
Firestone Tire & Rubber Co. 108
Fitzgerald Mfg. Co. 253
Foremost Farm Papers Co. 141
Fosdick, Inc., Harry 161
Four Wheel Drive Auto Co. 138-139
Fried & Stonier 253
Fulton Co. ..... 174 & 239

Gemco Co. 241
General Electric Co. 187
Gibson-Hollister Mfg. Co. 254
Goodrich-Lenhart Mfg. Co. 122
Goodyear Tire & Rubber Co. 157
Graham Brothers 151
Greenfield Tap & Die Corp. 240
Grossman Mfg. Corp., Emil 252
Gulf Refining Co. 248
Gurney Ball Bearing Co. 179

H. & D. Co. 88
Hal Motor Car Co. 110
Hartford, Inc., E. V. 4
Harton & Co., Jos. J. 249
Hassler, Inc., Robert H. 249
Hawthorne Mfg. Co. 96-97
Haynes Automobile Co. 85
Haywood Tire & Equipment Co. 244
Heinze Co., J. O. 89
Henney Buggy 249
Herschell-Spillman Co. 214
Hess-Bright Mfg. Co. 112
Hide & Leather Belting Co. 2
Hill Pump & Valve Co. 167
Hill-Smith Metal Goods Co. 150
Holmes & Bro., Robert 254
Hood Tire Co. 99
Houk Mfg. Co. 253
Hudson Sales Co. 169
Hurlburt Motor Truck Co. 254
Hyatt Roller Bearing Co. 254

Imp Carbon Chaser Corp. 254
Indian Refining Co. 223
International Harvester Co. 240
Interstate Motor Co. 218

Jenkins Vacuum Spring Co. 244
Johnson Co. 93
Johnson Gas Appliance Co. 245
Johns-Manville Co., H. W. 200-201
Johnson & Sons, S. C. ..... Back Cover

Digitized by Google

Advertisers' Index

K-P Mfg. Co. 239
Keys Piston Ring Co. 90
King Motor Car Co. 105
Kissel Motor Car Co. 106-107
Krembs & Co. 251

Laurel Motor Car Co. 154
Lexington-Howard Co. ..... 193 to 196
Liberty Motor Car Co. 254
Long Mfg. Co. 146
Lunkenheimer Co. 246
Lyon Metallic Mfg. Co. 254

MacGregor Co., John 210
Majestic Motor Co. 255
Manley Motor Corp. 212
Marvel Accessories Mfg. Co. 162-163
Mason Tire & Rubber Co. 211
Maxwell Motor Co. 134-135
McQuay-Norris Mfg. Co. ..... Third Cover
Merchant & Evans 262
Michelin Tire Co. 77
Mitchell Motors Co., Inc. 160
Moline Automobile Co. 159
Monroe Motor Co. ..... 125 to 128
Moon Motor Car Co. 189
Morse Twist Drill & Machine Co. 245
Mosler & Co., A. R. 255
MotoMeter Co. 215
Motor Age 250
Motor Products Corp. 258

National Automobile Show 186
National Motor Car & Vehicle Corp. 79
National Rubber Co. 88
New Departure Mfg. Co. 182
New Era Spring & Specialty Co. 254
New Process Gear Corp. 250
Nordyke & Marmon Co. 81-82
Norma Co. of America 8

Oakes Co. 143
Oakes & Dow 246
Organization, care Motor World 252

Parry Mfg. Co. 247
Pennsy Motors Co. of Pittsburgh 176-177
Perlman Rim Co. 147
Perry Auto Lock Co. 219
Philips-Brinton Co. 216-217
Pfau Mfg. Co. 247
Pittsburgh Electric Specialty Co. 241
Pittsfield Spark Oil Co. 243
Pouvailsmith Corp. 175
Prest-O-Lite Co. 250
Protexall Co. 243

Quaker City Rubber Co. 250

Rajah Auto Supply Co. 255
Raybestos Co. 204-205
Rayfield Carburetor Co. 197
Redee Mfg. Co. 251
Rex Ignition Mfg. Co. 153
Robinson Mfg. Co. 255
Rubber Insulated Metal Corp. 209

S. K. F. Ball Bearing Co. 222
Sager Co., J. H. 234
Schutte, Chas. E. 235
Scripps-Booth Corp. 220
Selden Truck Sales Co. 140
Shaler Co., C. A. 172-173
Sheldon Axle & Spring Co. 224
Sloat, E. R. 262
Sparks-Withington Co. 228b, 252
Splitdorf Electrical Co. 184
Stableford Truck Mfg. Co. 149
Standard Steel Car Co. 142
States Chemical Co. 227
Stephens Motor Branch 190
Stevens & Co. 255
Stewart-Warner Speedometer Corp. ..... Second Cover
Storm & O'Hair 187
Stromberg Motor Devices Co. 123
Studebaker Corp. 1
Sunderman Corp. 80
Swedish Crucible Steel Co. 226
Swinehart Tire & Rubber Co. 255

Tiona Oil Co. 229
Tuthill Spring Co. 145

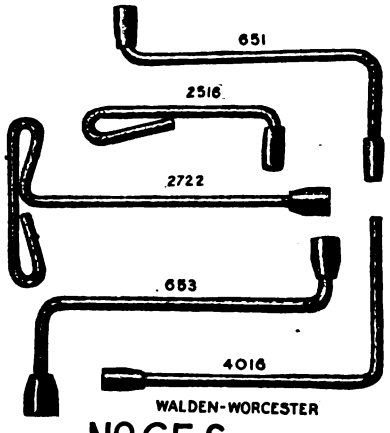
United Engineering & Mfg. Co. 231
U. S. Ball Bearing Co. ..... Front Cover & 101 to 104
Universal Car Equipment Co. 255
Universal Cramp Mfg. Co. 254
Universal Rim Co. 84

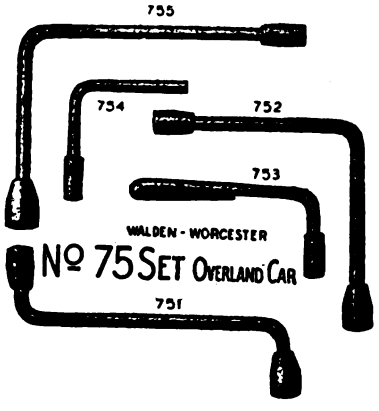
Van Cleef Bros. 213
Van Sicklen Co. 251
Velie Motor Vehicle Corp. 86-87
Vesta Accumulator Co. 228
Vincent Clear-Room Steering Wheel Co. 171

Walden Mfg. Co. 263
Walker Mfg. Co. 233
Warner Gear Co. 221
Warner Lens Co. 232
Weaver Mfg. Co. 155
Philip H. Webber Co. 98
Westcott Motor Car Co. 183
Westfield Chemical Co. 251
Whittier Co., The 148
Willard Storage Battery Co. 120-121
Wood Co., W. C. 182
Woodstock Hotel 244
Woodworth Mfg. Corp. 178

Zenith Carburetor Co. 255

WALDEN WORCESTER WRENCHES





Walden-Worcester Wrenches

We take pleasure in announcing that it is possible to secure the famous WALDEN-WORCESTER Socket-Wrench Sets

For

OVERLAND and DODGE Cars

Owners and Dealers know the value of these specially adapted wrench sets. They save time and trouble—they do clean work.

Dealers will find them as popular as our socket wrenches for Ford cars.

Our tools are guaranteed for service.

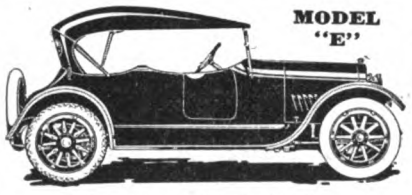
Write for 1917 catalog.

WALDEN MFG. COMPANY
50 CENTRAL STREET
WORCESTER MASS.

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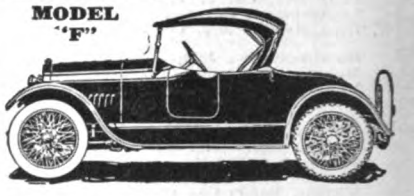
Can a quality car be built to sell under $1,000?

Yes! here it is!



Four-Passenger Touring Roadster. Seats every one of the four comfortably.

ELCAR



Two-Passenger Roadster. Fine appearing, and with two large luggage compartments.

For seven years we built motor cars selling up to $3,000, and good value for the money. A year ago we entered the lower-price field with a car under $1,000. It was built in the same factory and by the same men who had hitherto built our higher-priced cars. The product of a factory and organization so specialized and drilled in high quality production, cannot but carry high quality in it. The *Elcar* last season was *the Quality Car Under $1,000.*

The Newest Elcar–the 1917 Elcar at $845

Represents more sheer value for each individual dollar of price than we have ever before been able to give in our entire *forty-four years* of manufacturing experience. It is a larger car, with 115-inch wheel base. Each model is as roomy as one would care to have a car of the same body type —no skimpiness anywhere. The same workmanship goes into the construction and into the finishing that went into our cars at $2,000 and more. It is a car of distinctive beauty, and with no suggestion of that "turned-out-by-the-million" look.

Further, the newest *Elcar* is better than ever mechanically. It has the finest type of *full-floating* rear axle; *spiral bevel* driving gears; a *seven plate dry disk* clutch, and other high class features concerning which we must refer you to our catalog, which goes into even the minute details.

If you want a car to be proud of for appearance and performance; complete in every particular; large and roomy; an easy driver and an easy rider; a car to give you long and dependable service, you need pay no more than the price of the *Elcar.*

Write for Our 24-Page Illustrated Catalog

showing all models and the more important mechanical parts.

A Few ELCAR SPECIFICATIONS

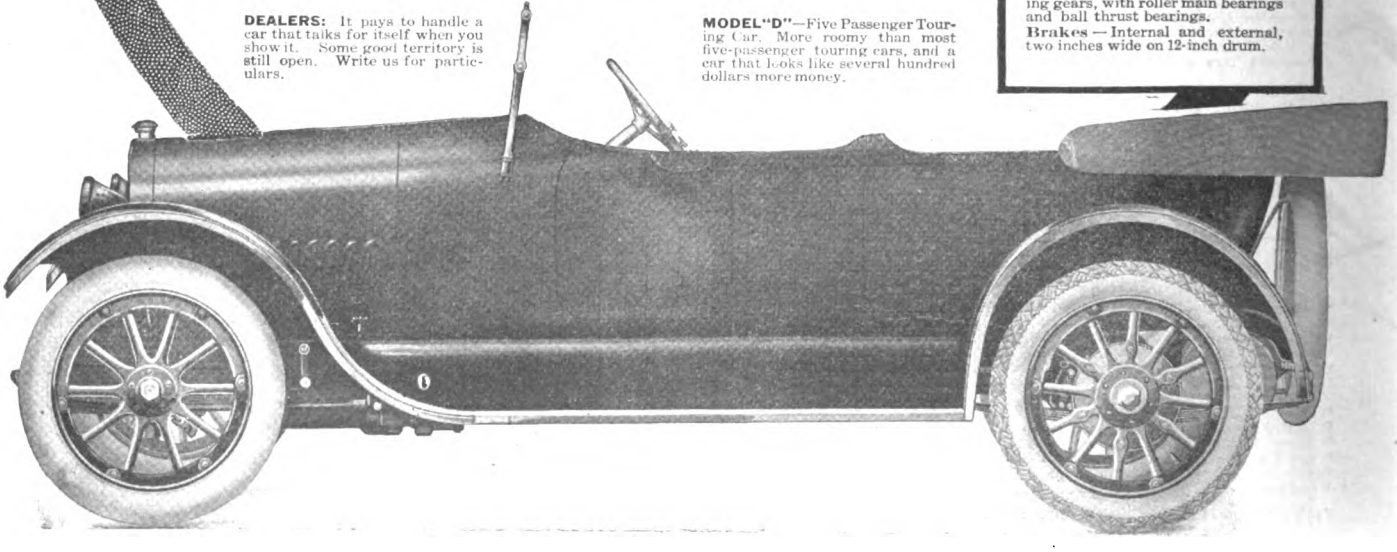
Wheel Base—As long as some cars selling up to $3,000 and more—115 in.
Motor—4-cylinder; long stroke; high speed; 34.7 h.p. at 1,800 r.p.m
Fuel Supply—Stewart vacuum system.
Ignition—Delco automatic spark advance with manual control.
Starting and Lighting—Dyneto two-unit; double-bulb headlights; Willard storage battery.
Clutch—Dry multiple disk—seven plates, steel on Raybestos.
Rear Axle—Full-floating with roller bearings at each end of wheel hubs.
Differential—Spiral bevel driving gears, with roller main bearings and ball thrust bearings.
Brakes—Internal and external, two inches wide on 12-inch drum.

Elkhart Carriage & Motor Car Company

C779 Beardsley Avenue, Elkhart, Indiana

DEALERS: It pays to handle a car that talks for itself when you show it. Some good territory is still open. Write us for particulars.

MODEL "D"—Five Passenger Touring Car. More roomy than most five-passenger touring cars, and a car that looks like several hundred dollars more money.



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JOHNSON'S AUTOMOBILE PRODUCTS



Protects and preserves the finish. Impervious to dust, water, weather, etc.



For renewing tops, side curtains, etc. Also touching up worn, rusty, metal parts.



Cures 80% of engine troubles. The safest, easiest and quickest method.

THE line shown on this page is The Quality Line. S. C. Johnson & Son stand back of every product they manufacture with a good big advertising campaign. You need not fear any of these products proving poor sellers.

For 1917 our advertising appropriation has been doubled. Advertisements will appear in every issue of all the motor papers and in addition to this we will use large space in all the leading magazines and weeklies. See our five-page colored insert in the January issue of Motor.

Johnson's Products are for sale by all jobbers.

For further particulars or samples of any Johnson Products, write us on your business letter head.

S. C. JOHNSON & SON
Dept. MW
RACINE, WIS.



Removes spots, road-oil, scum, etc., from body, hood and fenders.



An automobile body varnish that amateurs can use successfully. Dries in 24 hours.



Penetrates between the leaves of springs thoroughly lubricating them.

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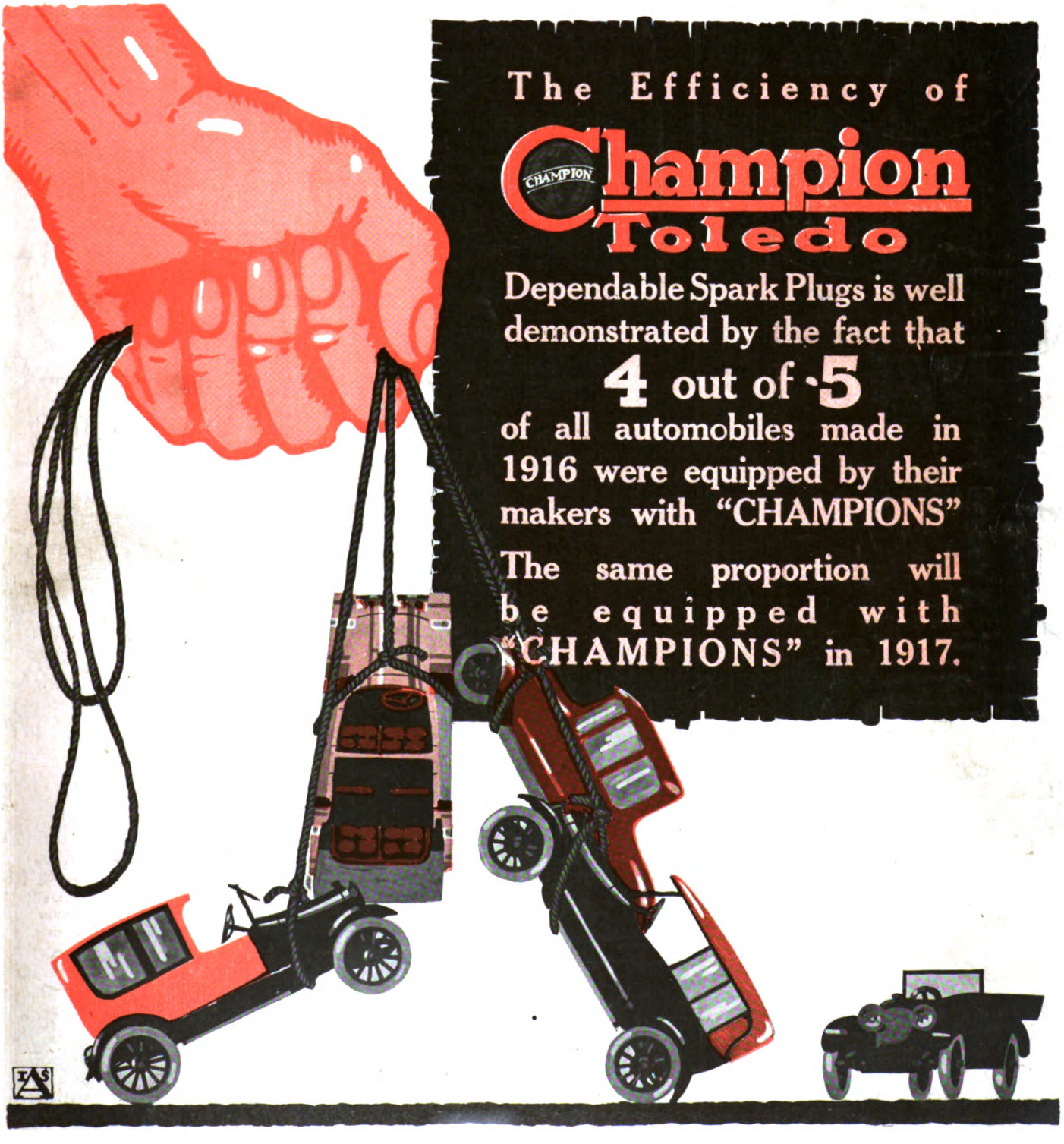
MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Volume L
No. 4

New York, January 24, 1917

Ten cents a copy
Two dollars a year

The Efficiency of
CHAMPION Champion
Toledo
Dependable Spark Plugs is well demonstrated by the fact that
4 out of 5
of all automobiles made in 1916 were equipped by their makers with "CHAMPIONS"
The same proportion will be equipped with "CHAMPIONS" in 1917.



Editorial Contents—Page 3

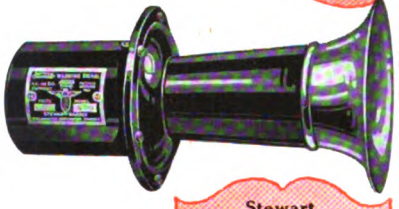
Advertisers' Index—Next to Last Page

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Stewart Products



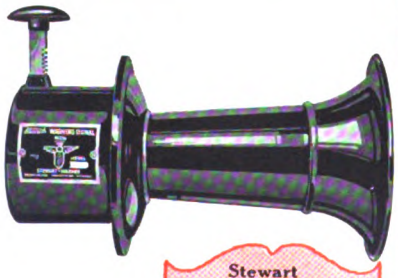
Stewart Speedometer for Fords $10



Stewart Motor Driven Warning Signals $6



Stewart Tire Pump $12



Stewart Hand Operated Warning Signal $3.50

Business Getters Every One

Stewart Products are by far the easiest accessories to sell.

Each one is best known in its line. Each one is most advertised. Each one is most perfect in design and construction.

Why clutter your shelves with a slow-moving stock when you can handle accessories like these?

Stewart Products offer you a steady source of income all year 'round—in Winter as well as Summer.

Nothing could be more necessary in cold weather than good spark plugs. And Stewart V-Rays are the most satisfactory plugs made. Their four sparking points mean absolute dependability—longer life—a bigger, fatter, hotter spark.

That's the kind of a plug you want to handle.

Then think of the wonderful opportunity in the Stewart Speedometer for Fords! It comes alone—or mounted in a handsome cowl board of enameled steel, for $11.25. Hundreds of thousands of Ford owners want it.

There's your chance. And don't forget—every other Stewart Product offers an opportunity just as great.

Get busy now. Write us today.

Stewart PRODUCTS

PRESTIGE QUALITY SERVICE SATISFACTION MADE IN USA

Stewart-Warner Speedometer Corp.

Chicago, U. S. A.



Stewart Speedometer $25



Stewart V-Ray Spark Plug $1



Warner Auto-Meter $50



Stewart Vacuum System $10

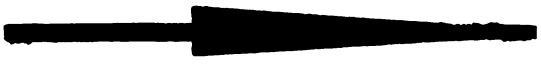
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40,000 POUNDS

40,000 pounds pressure—



is exerted on this mica insulation



when this wedge-shaped spindle is forced up into it.

No Gaskets, Bushings, Cement or Shellac hold the ANSWER Plug together.

This absence of joints makes a gas-tight, leak-proof,— ALL-POWER-FUL SPARK PLUG.

The ANSWER SPARK PLUG



Here's the cross-section

A Plug That You Can Talk About

You don't need to argue to sell ANSWER Spark Plugs. You simply point out their visible features —and every experienced motorist quickly grasps them.

You can show a motorist that the ANSWER is insulated with sheets of mica from **end to end** of the plug. It is the **only** mica plug so thoroughly insulated. What chance has any spark to break through?

The mica insulation is **wrapped on the inside of the shell**—not built up with mica washers. This difference in construction makes the ANSWER Plug oil-proof. Our method of insulating makes breakage entirely impossible. Long life and perfect spark plug service naturally follow.

A word about the guarantee:

We believe our guarantee to be sensible and business-like. Every ANSWER Spark Plug will give at least 10,000 miles of perfect service—or you are authorized to give a new plug free. **We make good to you.** But it is the exceptional plug that won't give five or six times that mileage.

Regular sizes $1—Ford Special 75c.

This year sell a plug that you can talk about. Stock ANSWER Spark Plugs. There's a long profit in them, not to mention the satisfaction that **you get** from knowing that the car owner is satisfied.

Write for discounts to-day.

HILBORN COMPANY, Inc., 535 CANAL STREET NEW YORK CITY

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Year 'round profit



THIS winter's unusual amount of automobile driving is one more reason why you should start right now to get in line for all year 'round Fisk profits.

Write Dept. 23, *The Fisk Rubber Company of N. Y., Chicopee Falls, Mass.*, and let us send our representative to see you, to tell you more about the money to be made in selling

FISK TIRES

Trade Mark Reg. U. S. Pat. Off.

Time to Re-tire?
(Buy Fisk)

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MOTOR WORLD
DEALERS, JOBBERS AND GARAGEMEN

PUBLISHED EVERY WEDNESDAY

The Class Journal Co.
231-241 West 39th Street, New York City
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Cleveland—516-517 Swetland Bldg., Phone Prospect 167

Subscription, Per Annum (Postage Paid).....$2.00
Foreign and Canadian Subscriptions..... 4.00
Single Copies (Postage Paid).....10 Cents

Postage Stamps will be accepted in payment for subscriptions. Checks, Drafts and Money Orders should be made payable to MOTOR WORLD.
The payment of subscriptions will be shown by stamping the date of expiration—the month and year—on the wrapper that carries your paper each week. No other acknowledgment necessary.

Cable Address, "MOTORWORLD," New York
Entered as second-class matter at the New York Post Office, Nov., 1900
Member of the Audit Bureau of Circulations

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The Class Journal Co.

Editorial Contents

The Garage Business Will Pay.....5-7
That is, it will pay if a garageman puts his soul into his work and that is what these Wilmington, Del., garagemen have done.

$9,500 Chassis with 130-Hp. Aviation Engine..8-9
This is the Fageol car, and the engine gives 1 h.p. for every 4¼ lbs. of car weight.

The Man Who Lacks Spizz.....12-13
Here is Reilly at his best—straight-from-the shoulder advice that will make better salesmen.

Better Mehanics.....14-16
This tells how to repair and adjust the clutch in Reo cars.

Philadelphia Expects Banner Year.....39-40
This show story tells how Philadelphia dealers sold 41,000 cars last year and will sell 61,000 this year.

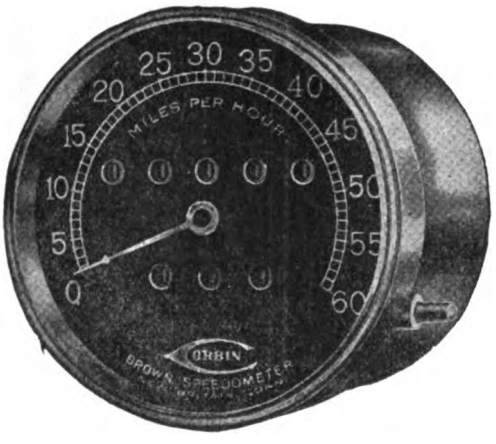
The Newest Accessories.....20-25
Six pages this week of the latest devices on the market.

Winter Business.....10-11
Here are some letters which can be sent out NOW and will bring winter business.

An Editorial by Turner.....28
Questions Answered.....18-19
Scientific Garage Construction.....34-35
Repairshop Short-Cuts.....36-37
What the Associations Are Doing.....42
What Show Managers Are Doing.....43
Gasoline Prices Still Rising.....41
The Retail News.....30-32
Angles of the Law.....17
Dealers Who Have Made Good.....27
Accounting and Systems.....26
Motor World Guide.....46-47

Advertisers' Index on Pages 118-119

98 Space 98
Chicago Show



The
CORBIN-BROWN
SPEEDOMETER

Remember this number at the Gallery Coliseum Chicago Show. Our representatives are at your disposal. See them and secure terms on your 1917 stock.

The Corbin Screw Corporation
THE AMERICAN HARDWARE CORPORATION, Successor
NEW BRITAIN, CONN.

BRANCHES: New York Chicago Philadelphia

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The Dealer The Jobber The Manufacturer

NATIONAL ASSOCIATION AUTOMOBILE ACCESSORY JOBBERS

Advertising Co-operation

Hitch your business to the manufacturers' advertising efforts. Use his pamphlets, envelope stuffers, literature, display cards, display stands, etc.

Make them all work for you. The man who doesn't misses the opportunity to hitch himself up to the big wheel of business already moving. He loses the momentum that the manufacturer has created. These advertising helps will make sales for you. By all means take every advantage of them.

Display cards, display stands, and all the different kinds of literature are made up entirely with the idea of pulling business for some one. Make them pull business for you. Don't let the business walk by your door to the other fellow. Divert this business and profit to your own good.

There are thousands of dollars worth of literature, display stands and cards, that are lying around without being placed so as to exert every possible effort Look around YOUR place and see what YOU have.

Use the display matter and pamphlets furnished you. Let people know what goods you handle and the additional business that it will bring to you will make it more than worth your while.

Hitch up your business with the manufacturers' advertising.

THE NATIONAL ASSN. OF AUTOMOBILE MEMBER ACCESSORY JOBBERS

Look for this emblem on the stationery of the houses you deal with.

The National Association of Automobile Accessory Jobbers

City Hall Square Bldg. Chicago, Ill.

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MOTOR WORLD for DEALERS, JOBBERS AND GARAGEMEN

Vol. L New York, U. S. A., Wednesday, January 24, 1917 No. 4

The Garage Business Will Pay

If a Man Puts His Soul Into His Work

Is the garage business worth while?
Does it pay to try to sell accessories?
Does it pay to work and strive for Winter Business?
Is the result worth the effort?

"There is money in it. It pays every time—if the garageman puts his soul into his work."

WHEN N. W. Howell, who operates the Tire Shop at 401 Delaware Avenue, Wilmington, Del., gave this answer, he told a story that is bigger, greater, more pulsing and full of life than whole volumes that have been written on business and the secrets of success.

If a man puts his soul into his work—

It means everything, and it discloses the path to success for thousands of garagemen and the reason for the failure of thousands of other garagemen to gain the fortunes they imagined would come.

The Motor World man was asking Howell particularly about the accessory end of the business, but what Howell said applies to all parts of all business. To Motor World have come comments in the past to the effect that many dealers and garagemen seem half-hearted, and Howell's success seems due to his wholeness of heart—putting his soul into his work.

"Proper management of a garage requires study," he asserted emphatically, "but it's an easy study if the garageman takes real interest in his business.

"A man never buys anything he can't see," continued Howell, amplifying his remarks as to the study of his business. "There is all the difference in the world between an attractive shop and an unattractive shop. Human nature will direct the purchaser to the brighter, more cheerful, more business-like place.

"A wise business man—who puts his soul into his work—may find it necessary to rebuild his establishment and he should do so with the idea of making it brighter and lighter. Care in the arrangement of stock should follow; system in han-

THE thoughts in this story come from the live little city of Wilmington, Del., from garagemen who believe that action and reaction are equal, that a man gets what he gives, that he gets from his work what he puts into it.

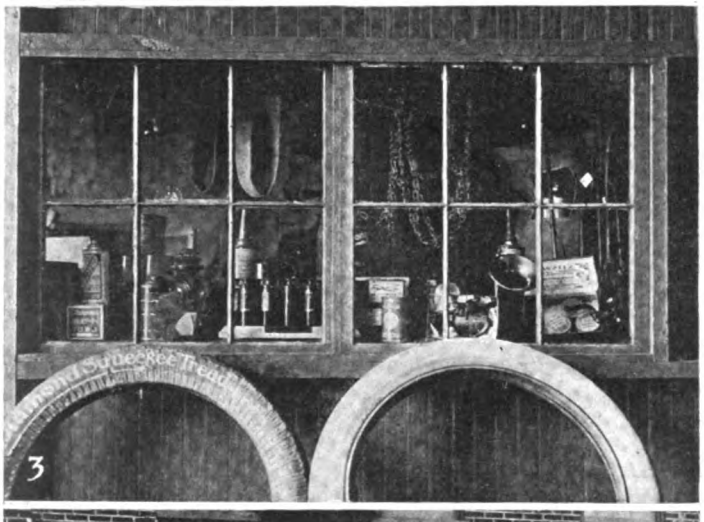
EACH man can give abundantly of himself, and that is what the trade needs greatly. Half-heartedness in business has meant failure for thousands who could not see why they did not succeed. Lack of heart was the cause.

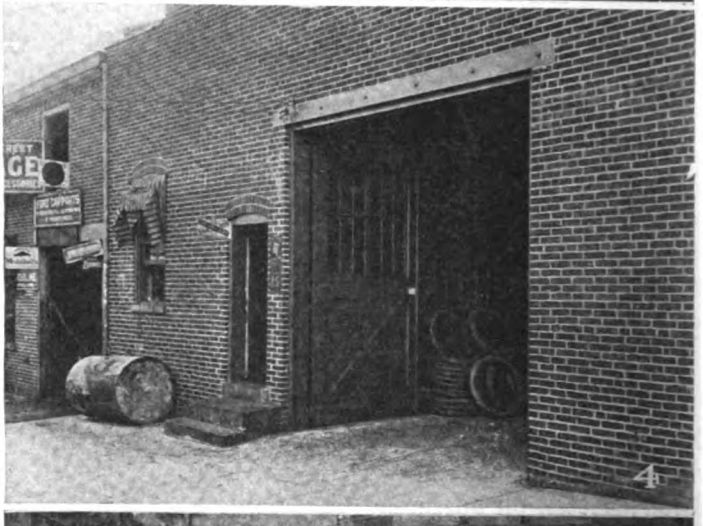
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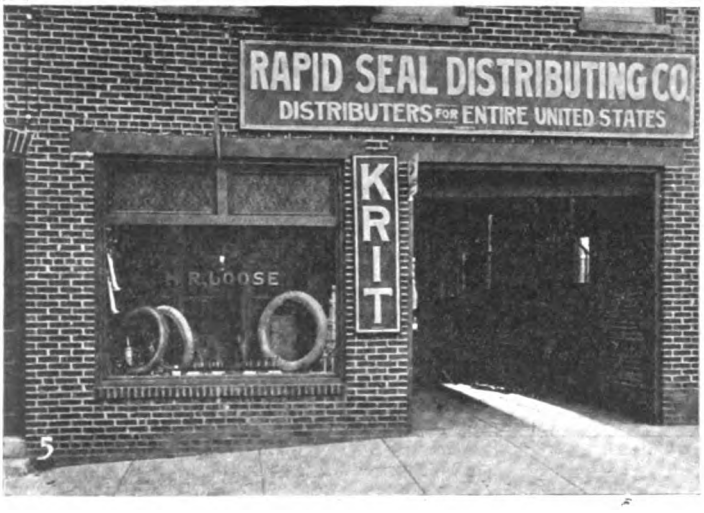
It Pays—For They Put Their Souls Into Their Work













1—*Enoch Moore, and the entrance to his garage, which is clean and modern.*

2—*Display case in the office of the Moore Automobile Co., which display earns money for the wide-awake proprietor.*

3—*The French Street Garage displays accessories where they cannot help but be seen by the motorist.*

4—*Just inside the door of the French Street Garage is the display cabinet shown in Picture No. 3. It is just above the pile of tires.*

5—*Henry R. Loose makes an appeal for the car owner's dollar with this window.*

6—*The Tire Shop Co. goes in particularly strong for window display.*

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ling his supplies is essential to success.

"Time and money spent in displaying goods in windows and show cases is money and time well spent. He can trace sales directly to the displays that his study of his business have developed.

"Location is important," he added. "Rent is secondary. If a man HAS CONFIDENCE IN HIMSELF he should choose a location prominent enough to give full exercise to his talents.

Advertising and Display

"If he desires to push an article he should advertise it well. All his wares should be displayed. He should put his whole heart into the development of his business and not let his stock rest in hidden places behind counters and on shelves.

"Study which articles are most attractive to the public and put these where they are seen by the customer as soon as he enters the store. A few from a great number, well displayed, is far better than many small parts in a display. Manufacturers distribute posters and display devices, all of which can be made to make money for the garageman and dealer if he studies his business—and puts his soul into his work."

Multitude of Small Steps

The study of his business by the man whose soul is in his work will reveal a multitude of small steps whereby the business may mount to success. Step by step, Harry R. Loose, of 115 Concord Avenue, Wilmington, forges the bonds between himself and his customers, through a method that has come from study of his business.

"Get in touch with men!" is his idea, for from this first contact the first sale, of maybe a few cents value, may come —and has come—a growing, profitable business. One of Loose's first principles in getting in touch with the public is his display window. Men, women and children are attracted by it—and stop in. From these "stop ins" come further business, for each visit is made a business event by Loose, and with all his soul he endeavors to follow up the visit and make the customer HIS.

By a study of human nature, Andrew Johnson, of the French Street Garage, has convinced himself that the biggest asset in business is GIVING A MAN WHAT HE WANTS WHEN HE WANTS IT, and this he does. Not only does he carry a complete stock, but he instituted an all-night service. Continually he is studying his trade—his soul is in his work.

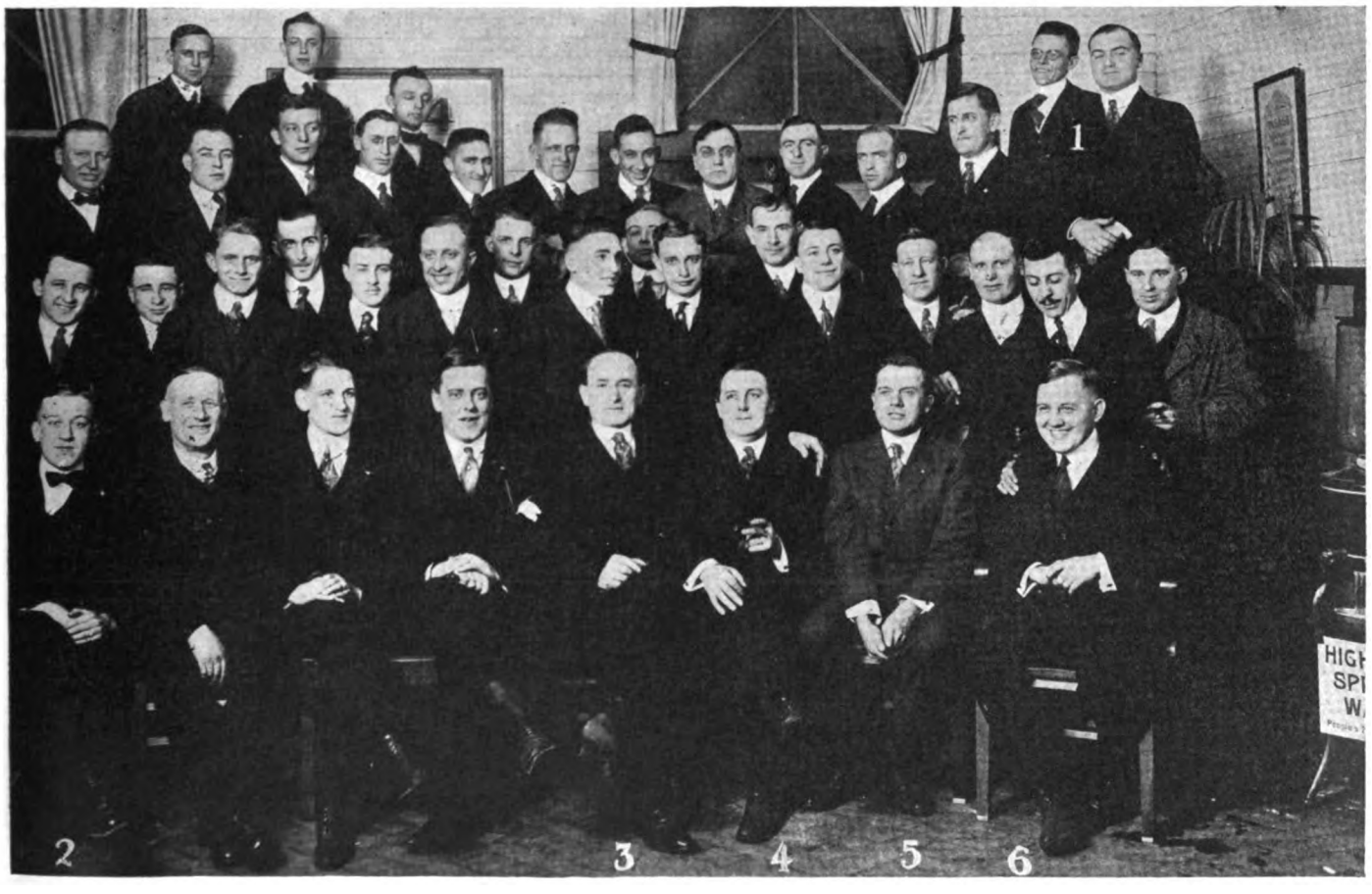
One other who has found that it pays to put his heart into his business is Enoch Moore, of the Moore Automobile Co. The garage business pays, accessories pay, everything pays, if—as Howell says—a man makes a study of his business.

Still in School

The end of school days is not the end of school, he asserts, for he is still in school—studying his business. And his soul is just as much in his work as it was in his books when he sat on a hard bench before a schoolmaster.

Enthusiasm characterizes these four men. Their businesses reflect their enthusiasm. They are rated in Bradstreet's, for their souls are in their work.

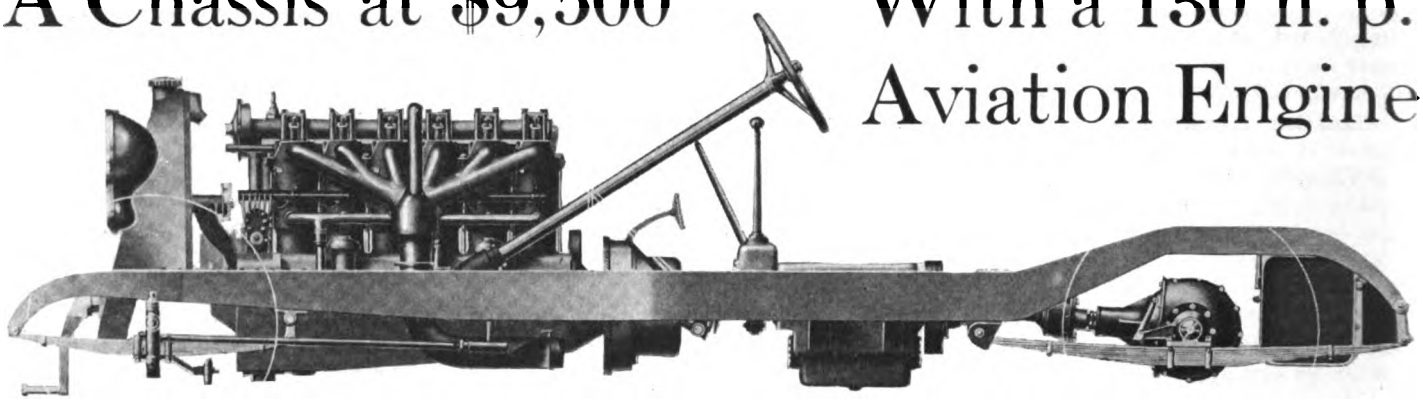
Akron Dealers Have Developed Great Cooperative Spirit



COOPERATION AMONG DEALERS has been developed to a high degree in Akron, Ohio, where the association does many things besides holding a very successful annual show. The men numbered in this picture are: 1—Frank B. Lewis, associate secretary of the automobile club. 2—W. J. Boardman, secretary of the Akron Automobile Dealers Association; Overland and Owen Magnetic 3—J. H. Wiener, treasurer of the association; Buick. 4—Andrew Auble, Jr., director of Association; Franklin, Chalmers and Locomobile. 5—A. O. Wood, president of the show association; Studebaker. 6—Grover Reese, general manager of the show association and secretary of the Akron Automobile Club.

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A Chassis at $9,500 With a 130 h. p. Aviation Engine



The Hall-Scott engine, together with the clutch and gearset in the Fageol chassis take up three-fourths of the length of the car

A Hall-Scott, Six Cylinder Engine Gives One Horsepower for Every 4½ lbs. of Car Weight

A CHASSIS that sells for $9,500 equipped with a six-cylinder aviation motor developing 130 hp., and thus giving 1 hp. for every 4½ lb. of chassis weight, characterizes the product of the Fageol Motors Co., Oakland, Cal. Only the chassis is supplied, bodies being built to order.

The motor is the overhead-valve Hall-Scott aviation power plant. In a recent test this six-cylinder unit was run continuously for 64 hr. at 1300 r.p.m., developing 130 b.hp. The weight of the engine is 560 lb., and it is guaranteed to produce 125 hp. at 1300 r.p.m.

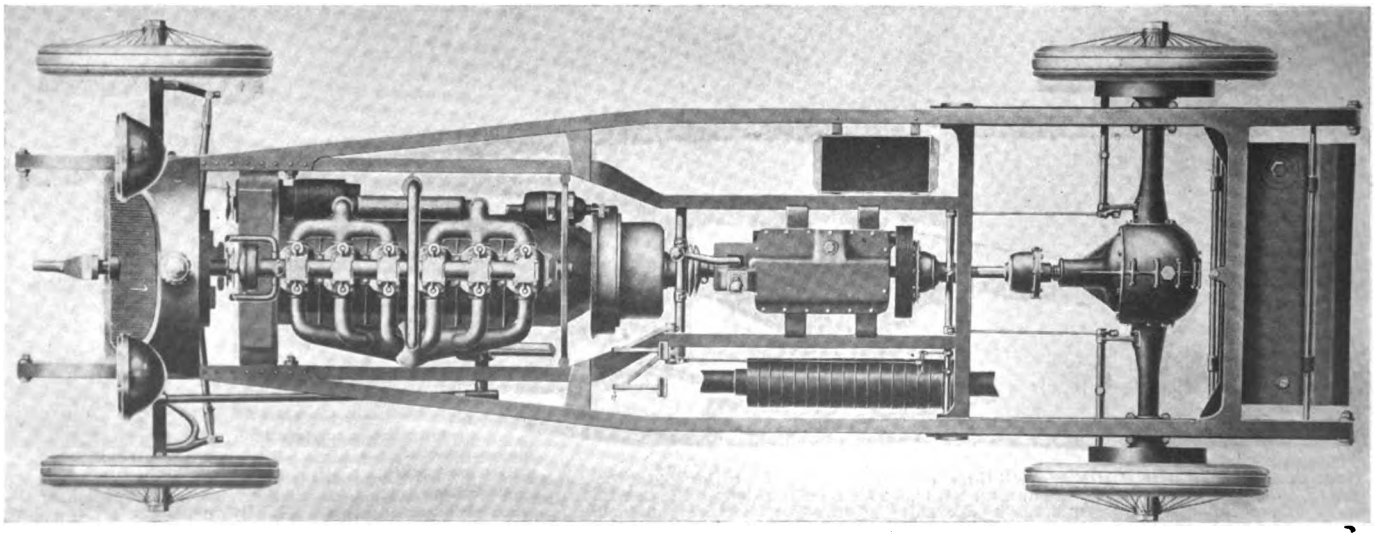
Cylinders have a bore and stroke of 5 x 7 in., and are cast separately but are machined on the sides so that when assembled they form a solid block and to all appearances are block-cast. The material for the cylinders is Swedish gray iron.

Swedish iron, known frequently as semi-steel, is also used for the pistons. These are made very light, but with the necessary strength and rigidity secured by a system of deep ribbing under an arch head.

Solid chrome-nickel steel forgings are used for the connecting-rods, with a gun-metal bushing at the piston-pin end, and a double bronze bushing carried in serrated shells is located at the crank end.

A seven-bearing crankshaft is used machined from a heat-treated drop forging of chrome-nickel steel. The diameter at the bearings is 2 in., and all but the front and rear bearings are 1 15/16 in. long. The rear main bearing is 4⅝ in. long and the front main bearing is 2 3/16. Timing gears and starting pinions are bolted to a flange which is turned integral with the shaft.

From the crankshaft the valve drive is carried to the overhead camshaft by means of a vertical shaft in connection with bevel gears. The camshaft is inclosed in an aluminum housing bolted directly to the tops of the cylinders. It is a one-piece design with the twelve cams integral, and the gear flange through which the shaft is driven is also an integral part of the forging. The shaft is carried on four large bearings, each lined with Parsons white brass. The valves are operated by short chrome-steel rocker arms with hardened-steel roller followers on the cam end and tool-steel adjusting screws on the opposite end. Valves are tungsten steel 2½ in. in diameter, or half the cylinder diameter. They are seated directly in the cylinder heads, fitted with large-diameter oil temper springs, held in tool-steel cups and locked with a key through the valve stem. The valve ports have been kept



The peculiar manifolding is well shown in this view as is the slanting radiator. The powerplant is carried on a sub-frame and the propeller shaft is exceptionally short. The rear gasoline tank is copper

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large in proportion with the valves, giving free inlets and outlets for the gases.

Both oil and water are used in the cooling system. The oil is circulated around a long intake manifold jacket, helping keep the crankcase heat at a minimum at all times and warming the intake. Uniform temperature of the cylinders is maintained by the use of internal outlet pipes running through the head of each of the six cylinders. Slots are cut in these pipes so that the cold water is drawn directly around the exhaust valve. Water circulation is by a centrifugal pump.

High-pressure oiling is used, with a large gear pump in the oil sump in the bottom of the crankcase.

The camshaft-drive mechanism is oiled by forcing the oil into the front end of the shaft, allowing the shaft itself to act as a distributor, and the surplus oil flows back to the crankshaft through a hollow vertical tube. This supply also oils the magneto and pump gears. Aluminum alloy is used in the construction of the crankcase, the lower half of which can be removed without breaking any of the oil-line connections.

For ignition two six-cylinder magnetos are used mounted on the opposite ends of a cross-shaft at the forward end of the engine. This gives two independent ignition systems with independent spark plugs. A double Zenith carbureter with a single float is used, with a unique feature in that the jacketing around the carbureter manifold is filled with the warm crankcase oil.

The engine is mounted on a subframe which carries the gearset and Hele-Shaw clutch. The driveshaft is short.

The gearbox is entirely a Fageol design mounted in a bronze and aluminum case cast in three parts. The box provides three speeds forward and reverse, and the ratios are such as to provide 5 to 1 on first, 2½ to 1 on second, and 1¼ to 1 on third. The novel feature of the case is that the main box and the supporting arms are of manganese bronze and so arranged that the main shaft and countershaft, mounted one above the other, are just half within the case.

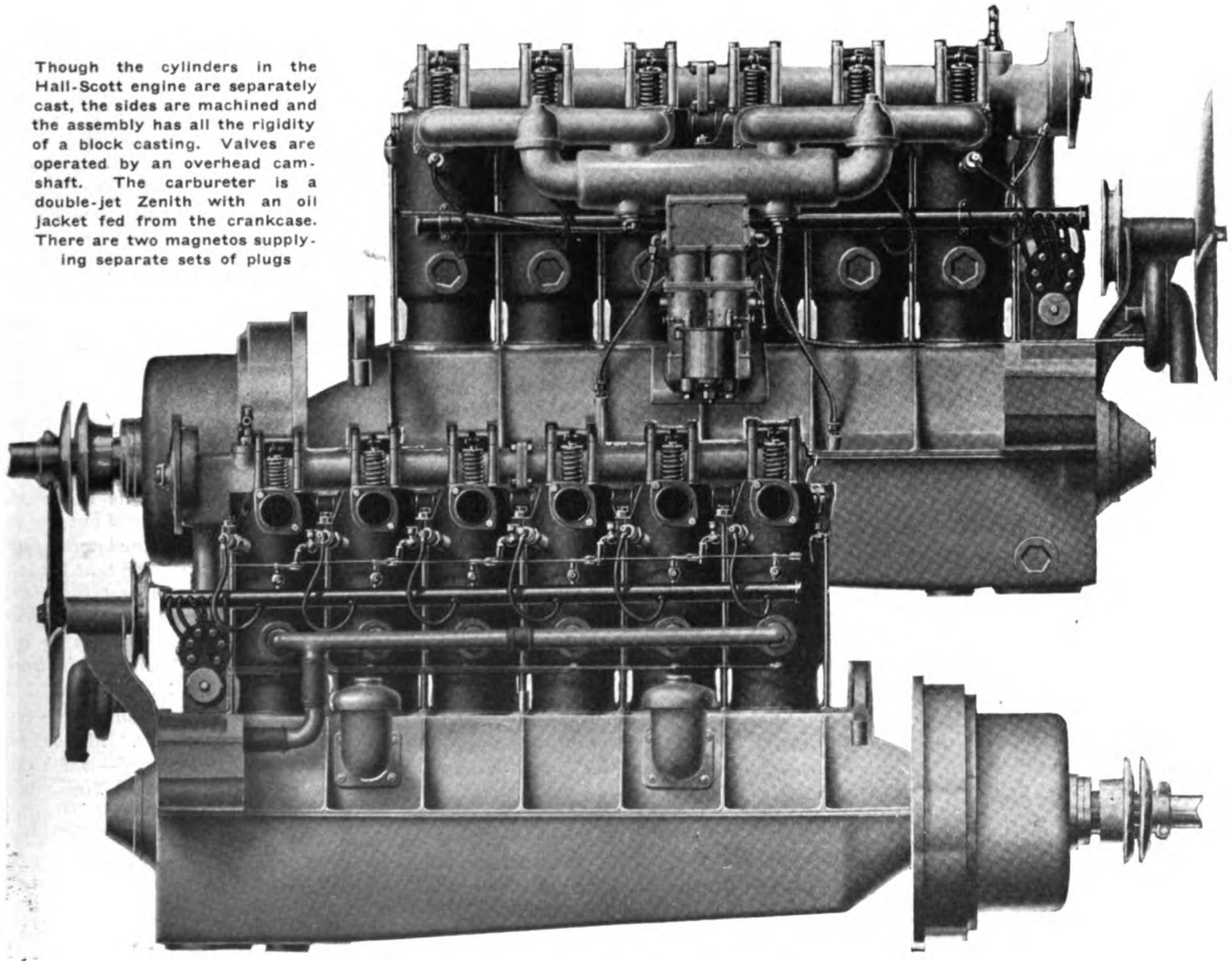
The upper section of the case is cast integrally with the brackets and forms a housing for the shifter lever, shifting mechanism and emergency brake lever. The object of this form of case is to permit a thorough inspection of the gears and bearings by simply removing either the upper or lower section of the case. Chrome-nickel-steel shafts and gears and annular ball bearings are used throughout.

A semi-floating rear axle is used, with the shafts carried on Bock taper roller bearings and with chrome-nickel steel used for the driving members. The front axle is an I-beam drop forging from chrome-nickel steel. The brake layout has been given particular attention, with the foot brakes mounted on 16-in. ribbed drums bolted on the rear wheels and the hand brake operating against the 12-in. ribbed drum on the main transmission shaft just back of the gearbox. The springs are semi-elliptic.

Alloy pressed steel is used for the frame. This is a special design. The side rails are 2 in. wide and 6½ in. deep, with the forward end narrowed down to 29 in. to permit of easy turning. The main sills of the frame are directly under the main sills of the body, with the front and rear springs directly under the main-frame members. The wheelbase is 135 to 145 in., according to the body model desired.

A feature of the radiator is that it is carried on a slant of 15 deg. This is not only for appearance, but greater cooling

(*Continued on page* 33)



Though the cylinders in the Hall-Scott engine are separately cast, the sides are machined and the assembly has all the rigidity of a block casting. Valves are operated by an overhead camshaft. The carbureter is a double-jet Zenith with an oil jacket fed from the crankcase. There are two magnetos supplying separate sets of plugs

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Winter Business

What Are You Doing With January?

Send These Letters Out NOW

ACTION is necessary to get Winter Business. Winter Business is necessary if you are to make a profit during the present month and not wind up with a loss in your repairshop, your car sales department and your accessory department. A profit CAN BE MADE this month, even if the weather is bad. But you MUST GO AFTER BUSINESS to make this profit.

These Are The Letters

TIRE REPAIR LETTER

SEND this tire letter to all the car owners in your territory, or as many of them as you can get listed in your prospect file. Go after them NOW.

Dear Mr. Prospect:

It will be a disappointment to you if your tires prove to be in bad condition when you get all set for spring touring.

If you run the car a few miles and then are confronted with an unexpected trouble it will be a great inconvenience to you and, if you are on a business trip, it may mean a direct financial loss to you, aside from the cost of the tire trouble.

Practically all of this possibility of trouble can be eliminated by giving a little attention to your tires NOW.

They are always developing little cuts which mean big troubles later on.

We have a tire expert who will be pleased to inspect your tires and advise you as to their condition. If your car is jacked up for the winter he will visit your garage, and if work needs to be done he will remove the tires, repair them, store them in our warm storeroom until the date you specify and then replace them.

Preparedness is important. Phone James 1923.

Yours for high tire mileage,
BURT'S GARAGE.

CAR SALES LETTER

THERE is no reason why prospects should not be buying cars now. They are doing it in a lot of towns. Why not in YOUR town—and it doesn't make any difference where you are.

Dear Mr. Prospect:

You have no idea how disappointed some of the people in and about Callawassa were 10 *months ago when they wanted to start spring touring in their new Sennett cars.*

They were disappointed because they had everything necessary except the cars —and the cars they could not get for love or money.

It is human nature not to buy a thing until we are ready to use it and the big urge to buy a car doesn't come until the leaves get green and the birds begin to sing and the whole country beckons to us. Then we want the car.

The sure way to have the car is to arrange for it NOW. Care are shipped to us regularly each month. Right now they are coming a little faster than the orders. A little later the orders will catch up. Then we shall have more orders than cars and the late comers will have to wait for our summer shipments.

We suggest that you investigate this matter and ask us the latest date we can promise you, with certainty, a Sennett.

Very truly yours,
BURT'S GARAGE.

OVERHAUL LETTER

GET this to the list of car owners in your territory. If you specialize in Ford or any other work go hard on that list. If you don't want Ford work omit the Ford owners.

Dear Mr. Prospect:

You and we are agreed on one thing:

When spring opens up we all want your car to be giving the best of service so you can get full enjoyment out of it.

In order that your car may be right you undoubtedly will want a few things done, a few adjustments made, a few little repairs.

Because these many little things develop when the car is started out for the spring we are overwhelmed with business at that time. In order that we may be able to give you the best that is in our shop and in order that you may not be inconvenienced by delay due to any rush, we suggest that you get in touch with our service plant NOW.

Work done now will be out of the way when you want the car. Maybe you would like the car repainted—which does wonders for a car's looks. Maybe your motor needs tuning up and cleaning.

Drop in and ask our service manager to go over the car for you and advise you as to its condition.

Very truly yours,
BURT'S GARAGE.

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Speed Up

WINTER causes all animals to slow up. Bears go to sleep. Men take on weight and some are less active. Some businesses slow down and some dealers and garagemen go to sleep. But don't slow down and DON'T GO TO SLEEP. At the time when nature slows up and the snow tends to slacken business is the very time you want to make the greatest effort. When things come slowest you should go after them the hardest. Men who take only what comes easy fall behind those who fight when things come hard. Speed up! Run your business yourself. Don't let it be run by the weather. Do things! Go after Winter Business. You can get it if you go after it. You can succeed in anything IF— Do things! Speed up!

SELL WINTER ACCESSORIES

THOUSANDS of accessories for use during the winter are being turned out by manufacturers. Probably you have some of them in stock right now.

In TWO MONTHS nobody will want these accessories and if you haven't sold them you will have to sacrifice them at a loss or carry them until next winter—which also is a loss because it means that the money tied up in these accessories can't be working for you during the summer. It is just the same as though you put the money in a tomato can and buried it in the back yard until next winter.

That is POOR BUSINESS.

GOOD business men keep their money turning over rapidly. If you turn $1,000 over six times a year it is the same as though you had $6,000 and turned it over six times a year. And if you don't get this Winter Accessories stock turned over SOON it is going to mean a loss to you.

But maybe you didn't stock any Winter Accessories. If not, you have missed a big opportunity—and it ISN'T TOO LATE to stock some and get rid of them before spring. No matter which way you put it, it's up to you to SELL SOME WINTER ACCESSORIES right now.

Winter was given to this trade so it could sell Winter Accessories. It is an opportunity, not a handicap. First, stock the accessories. Then—

Do These Things

1—Get a list of the car owners in your territory, if you haven't such a list.

2—Send to this list a letter about what your Winter Accessories can do for the car owner.

3—Follow this up with other letters, booklets, advertising literature and even telephone and personal calls. Demonstrate with these accessories on your car. Use a good car, not an old rickety boat.

4—If you don't know how to write the letters or plan the campaign, Motor World will be pleased to assist in any way it can.

5—Advertise in the newspapers. Set aside a certain sum for advertising and then plan to spend it in a certain period and plan your advertising campaign accordingly. Advertise every day or every other day, not just once a week.

6—Look over the cars in your garage. You know the owners, how well fixed they are, how much driving they do and whether certain accessories would be of service to them. Then go after these car owners and sell them accessories.

7—Distribute Winter Accessories literature in cars standing on the downtown streets. On cold days put out robe and heater literature. On stormy days slip over some windshield cleaner data. Make the literature fit the case.

8—Look into the headlight situation. If you have a lens or lamp that helps the motorist meet the headlight law, and if he is not so equipped, push this line through letters, booklets, calls and literature distributed in the evening on the downtown streets.

9—Push non-skin chains. You know their advantages during snowy weather and can tell this story without any suggestions.

10—Offer a prize of a good robe or some other nice accessory to the motorist who makes the longest winter run during a certain week. Arrange for accurate checking and limit the contest to your own territory. Charge the robe to advertising.

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Here Is Some Straight-from-the-Shoulder Advice That Will Help Make Better Salesmen

The Man Who Lacked Spizz

This is the first of a short series of Reilly stories pertaining to automobile show-time salesmanship. These were written only after a study of many shows. They touch upon points which must be eradicated in the period of modern intensive merchandising which is at hand and which means the survival of only those who are fit

By Ray W. Sherman

THEY were just coming down the center aisle of the car show at Middleport when they first saw him. He was dressed in a brown, a brown which once had been pretty. It was pretty good looking yet, so far as that goes, and the suit would have been passing fair if it had been pressed. It looked as if it reposed each night in a heap on the floor.

The suit was tired—so was the man inside it. This must have been so else the man never would have draped himself so wearily over the car. Of course, the car wasn't otherwise highly decorated, and the salesman may have been posing as part of the decorations, but he never could get by as a geranium. He might pass as ivy or wandering jew, but never as any plant or vegetable with a backbone.

They Find Exhibit A

Reilly and Tommp Trumbull stopped when they saw him. They looked.

"That's the man! Exhibit A!" exclaimed Reilly.

"Sure enough!" agreed Tommy. "Wonderful, isn't it?"

The exhibit was filled with pretty cars. They were well and roomily placed. The exhibit was fine—but the one lone salesman in sight was rotten.

"Over and over and over again they do it! Year after year," bemoaned Reilly. "Salesmen they may be on the company's expense record, but salesmen they are not when it comes to being up to snuff. Absogoldarnlutely not! Why there isn't started a movement in the trade to develop some real salesmen is a mystery to me.

"If the dealers would only give some real attention to this matter they might accomplish quite a little, but they continually lament the lack of good salesmen and would like to see something done about it. The best thing, to my mind, to do is to give some of these salesmen a good stiff jacking up, and if they don't come through with some real salesmen-like tactics can 'em and can 'em sudden. It's all foolishness contending that a salesman can't and won't stand up like a man if you go after him. If standing up and playing man is part of the job, and if the salesman is made to understand that it is part of the job, he will do it if he cares for the job. If you aren't paying him enough to make the job worth while pay him more and then require him to stand up and look like a human being.

"Some salesmen, Tommy, don't get money enough to stand up straight on. And some of them never did and never will stand up straight. But I would decline absolutely to have salesmen in an exhibit of mine who couldn't stand up straight and not go to sleep on the cars. When a salesman of mine, Tommy, gets so far gone he can't stand up, he is at liberty to go home and take a good fat rest—and if he has to spend too much of his time resting he had better take up resting as a steady occupation. There is no rest department in my business.

"You can go to show after show and through salesroom after salesroom, and you'll find that one of the greatest deficiencies in this business is the lassitude of salesmen. They seem to lack spizz. Maybe they don't, but they look as if they did, and I am quite sure that the way a man looks has a great deal to do with the way he feels and acts and works. No man can get into the habit of settling down into lazy positions without actually becoming lazy. The man who is up on his toes and fighting all the time is the man who accomplishes.

Drapes Unnecessary

"It is a black mark against a dealer if he has a sales force that drapes itself over the cars and looks sickly. It is taken as an indication of the condition of the dealer's business. It looks as though the dealer and all his organization lacked aggression—and they do. An organization is nothing but a team, just like a baseball nine, and who ever thought much of a team that lopped around the field like an armful of damp rags? It simply isn't done in the best baseball society.

"It is hard, I know, to stand up straight on your feet all day at an automobile show—but that is no excuse for the lopping around. No salesman should be required to stand for hours at a stretch. Some provision should be made for a rest now and then so the salesman won't get so unmercifully tired.

"For standing up makes a salesman more efficient, it helps him work better, it makes him earn more money, it makes the company earn more money, and it starts the salesmen along the road to better salesmanship and higher things in business. Sounds like bull, Tommy, but it's gospel truth."

"The shows are tiring," suggested Tommy.

"Yes, that's true; they are," agreed Reilly. "The shows are the one hard period of the whole year, and that's all the more reason why salesmen and dealers should make an extra effort and try to spurt a bit. The finish of a race is always hardest, but the men who win are the men who work hardest when the work is hardest. No quitter ever amounted to much—and never will.

Stand Up; Feel Aggressive

"No salesman can stand up on his feet and look aggressive without feeling aggressive. And if he feels aggressive idleness hangs on his hands. He wants to do something. He wants to make sales. He feels full of spizz and get-the-money. And that's what counts.

"It wouldn't be so bad, either, Tommy, if this were strictly a show-time difficulty. But it isn't! It applies the year around. Look into salesrooms in December or July and you'll see these human decorative pieces draped over the cars. If they can't stand up I'd rather see them sit down, but if they're going to make an effort at standing up let's have some real standing up."

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The suit was tired; so was the man, this must have been so, else the man never would have draped himself so wearily over the car.

Read the Reilly Story on the opposite page

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A Department of

Better Mechanics

No. 7

Editor Motor World:

We received your Motor World for Jan. 10 and we find that you printed just what we wanted to know about the Borg and Beck clutch. We had a job in the shop when we got the Motor World and we put it to work at once and it did fine work. Motor World solved the trouble.

We thank you for your good help.

HARTON BROS. GARAGE SERVICE,
Daytona Beach, Fla.
Per V. V. Harton, Mgr. Repair Dept.

CLUTCH REPAIR AND ADJUSTMENT ON REO THE FIFTH

THE complete removal of the clutch as herein outlined is seldom necessary, and only after adjustment has been tried and failed to remedy the trouble.

Evidence of Trouble

1—SLIPPING CLUTCH

This is often caused by lack of proper clearance between the clutch opening fingers and the release plate. This clearance should never be less than 1/16 in. or more than ⅛ in. when the clutch is in. This necessitates an adjustment of the clutch opening fingers. See clutch adjustment.

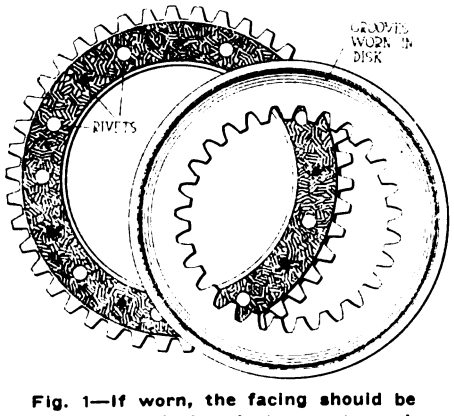


Fig. 1—If worn, the facing should be renewed, and the rivets countersunk below the surface to prevent grooving the steel disks. The steel disks should be renewed if grooved or warped

Another cause of slipping clutch is too little tension on the clutch springs, contained in recesses in the flywheel, as shown in Fig. 3. The nuts on the engine end should be tightened enough to prevent the clutch from slipping, but not enough to make the pedal difficult to operate. Never tighten the clutch spring nuts until the release fingers have been adjusted to the proper clearance.

Neither of the above adjustments will have any effect if the lining on the disks are worn so thin that the clutch casing seats on the flywheel, as shown in Fig. 3. When worn thus the clutch must be removed.

Continual slipping causes the disks to get very hot, warping the steel disks, as shown in Fig. 1, and raising the rivets on the lined disks so that they cause the clutch to chatter, with the possibility of grooving the disks and giving them a permanent warp.

2—NOISY CLUTCH, PARTICULARLY WHEN RELEASED

This is due to worn clutch thrust bearing. (See Fig. 3.) A removal of the clutch and replacement of the bearing is necessary.

To Remove the Clutch

1—Remove floor boards.
2—Remove starter driving chain.

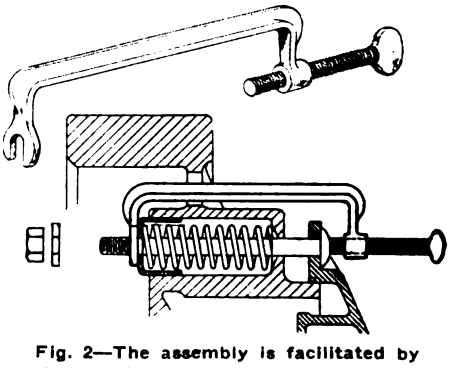


Fig. 2—The assembly is facilitated by the use of a simple compresser, applied in the manner illustrated. It is cast iron, though a similar one could be forged from bar stock. The main thing is to use a compressor of some sort

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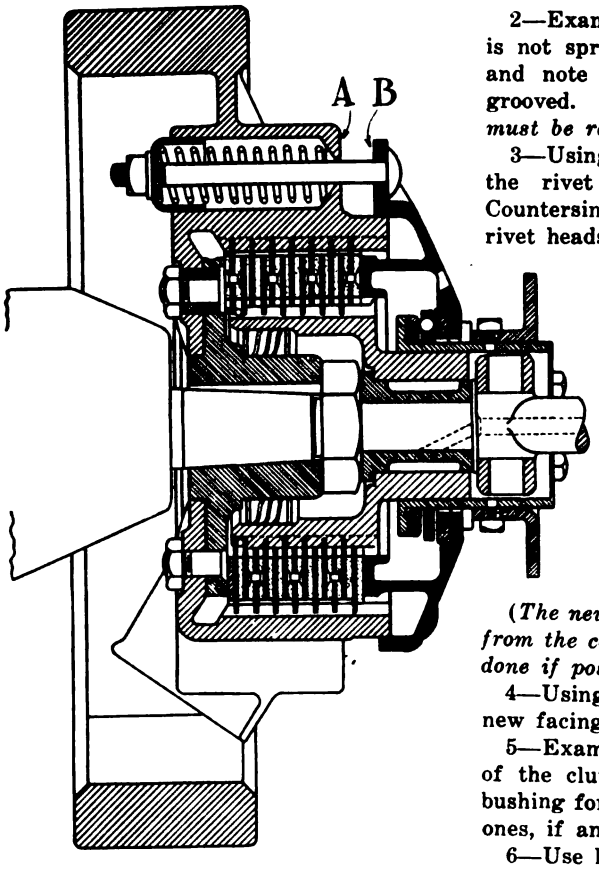


Fig. 3—Clutch assembly. When the disks are worn out, surface A touches surface B

3—Remove the two battery wires running to starting motor.

4—After removing the two bolts holding the right end of the starter, and the single bolt at the left end, remove starting motor.

5—Remove short drive shaft, with its universals, connecting clutch and gearbox.

6—Remove brake rods.

7—Remove bolts on clutch cross shaft and spring it up.

8—Remove clutch cross shaft.

9—Remove the nuts that hold the clutch spring bolts at the rear of the flywheel. Remove bolts.

10—Pull clutch out and remove from frame.

11—Place clutch ring assembly on bench with clutch rings up.

12—Remove snap ring and then remove all friction rings.

(*Note how the rings are removed so that the rings may again be built up in the proper sequence.*)

13—Clean all parts with gasoline and scrape out the clutch ring recesses both on the flywheel and the clutch hub.

The Repair

If asbestos faces of the disks are worn they must be replaced. The rivets holding them should be opened down below the surface, if the facing does not have to be refaced.

To Replace Facing

1—Cut off heads of old rivets, taking care that the disks are not sprung out of shape.

2—Examine each disk to see that it is not sprung or warped out of shape, and note whether the steel disks are grooved. *If either is the case the disks must be replaced.*

3—Using each disk as a template, drill the rivet holes in its new facings. Countersink the facings slightly for the rivet heads.

(*The new facings can best be obtained from the car makers, and this should be done if possible.*)

4—Using solid copper rivets, rivet the new facing to the disk.

5—Examine ball and roller bearings of the clutch for wear and the clutch bushing for looseness. Replace with new ones, if any amount of wear is evident.

6—Use little grease in assembling the bearings, *as the clutch must be run dry.*

When Assembling Clutch

1—Reassemble clutch, making certain that the rings are inserted in proper relation to each other. *An asbestos faced disk goes in first.*

2—Slide clutch back into place on motor.

3—Using clutch spring compressor, as shown in Fig. 2, replace nuts on clutch spring bolts. *Do not tighten these nuts yet.*

4—Replace clutch cross shaft.

5—Reconnect brake rods.

6—Replace drive shaft and universals.

7—Replace starting motor, wires and driving chain.

To Adjust Clutch

1—Adjust opening fingers on clutch throwout collar so that they strike the collar together. This is done by loosening the clamp bolts, holding them to the cross shaft and tapping them into alignment. *If this is not done the gears will not shift readily.*

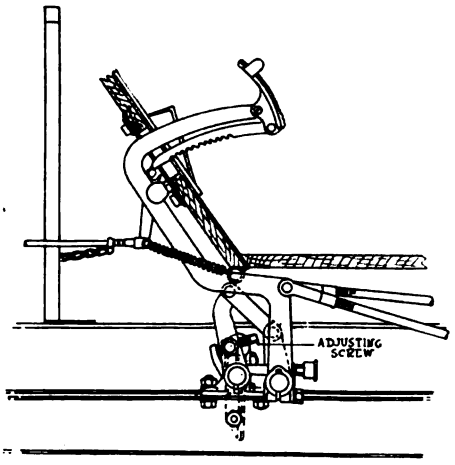


Fig. 4—To adjust clutch opening fingers, turn the adjusting screw on the clutch pedal until the clearance between the fingers and the release plate is about 1/16 in. when the clutch is in. The release plate should then spin freely

2—Adjust the clearance of the opening fingers. This is done by loosening the lock nut on the set screw, as shown in Fig. 4, and turning the screw in to decrease the clearance and out to increase the clearance. This screw should be turned out until the clutch release collar spins easily on the drive shaft when the clutch is in.

3—Tighten the nuts on the clutch springs at the rear of the flywheel, evenly, and until the clutch does not slip. *These nuts should not be tightened so that the clutch pedal works with difficulty.*

Maintenance

1—If the clutch starts to slip, adjust it at once.

2—Use no oil on the interior of the clutch, except as placed in the two oil openings in the drive shaft.

3—*Do not drive with the foot on the clutch pedal.*

Things Every Mechanic Should Know

How to Drill a Hole Dead True

Ordinary repairshop work does not often require that a hole be drilled absolutely true, but to the mechanic who makes his own jigs, fixtures or tools, accurate drilling is essential. This necessitates strict observation of principles.

For the sake of simplicity, a plain piece is assumed, having two holes to be drilled, these holes to be parallel and at a definite distance apart. Fig. 1 shows the piece.

It is essential that the work be accurately laid out, that the drill be sharp and that the hole be started on the drilling dead true. This is the way to do the job.

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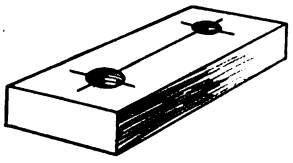


Fig. 5—The finished piece, with the center lines scribed

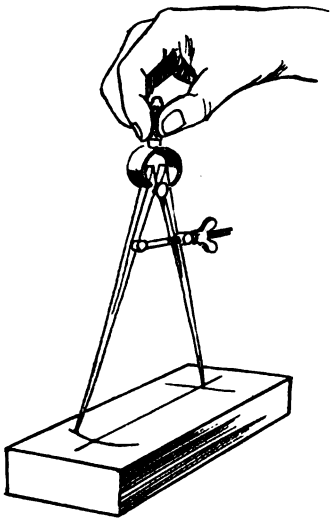


Fig. 6—Accurately mark off the center distances with a pair of steel dividers, after first lightly prickpunching one center

Preparing the Surface

On rough surfaces chalk may be rubbed on the surface to be marked and then smoothed down with the fingers, leaving a coating on which a line will be visible. Smooth, clean surfaces, however, should be copper coated with the following marking solution:

1 oz. copper sulphate,
4 oz. water,
1 teaspoon of nitric acid.

This should be applied to the surface to be marked with brush or a piece of waste, leaving a copper-coated surface that will show distinctly the finest lines drawn with scribers or dividers.

Laying Out the Work

1—With a square or steel scale mark the center line a-b, Fig. 5, using a sharp steel scribe.

2—On this centerline, at one end, locate the center of one hole and mark lightly with a sharp prick punch.

3—Set a pair of machinist's dividers (see Fig. 6) by a steel scale so that the points are the exact center distance of the two holes apart. Mark the second hole center, as shown in Fig. 6, and prick punch the intersection.

4—Check up the center distance of the two holes by another setting of the dividers. (*Note — From now on the method is the same in drilling both holes, hence only one will be described.*)

5—Set the dividers by a steel scale for a circle of the diameter of the hole to be drilled.

6—Scribe a circle on the piece, using the prick punch mark as a center. Locate light center marks on the circle, as shown in Fig. 9.

7—Enlarge the center prick punch mark to let the drill start easier.

Drilling the Hole

1—Clamp the work securely to the drill table, as shown in Fig. 7, or by some other convenient method. *Carelessness in holding the work causes more accidents in drilling than any other thing.*

2—Shift and adjust the table until the center punch mark is directly in line with the drill point.

3—Start the drill by hand feed, and cut a little.



Fig. 8—A cape chisel should be used in "drawing" the drill



Fig. 9—Left—The piece prepared and ready for drilling. The prick punch marks should be made carefully and lightly. Fig. 10—Middle—The groove should be made the depth that it is desired to draw the drill, and on the side that the drill is to be drawn. Fig. 11—Right—A triangular hole may be corrected in the manner illustrated

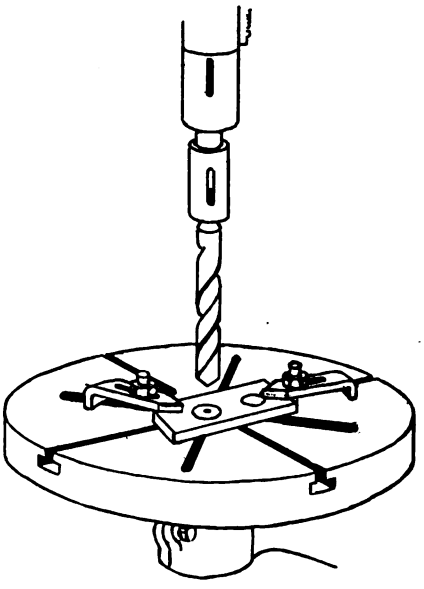


Fig. 7—The piece must be clamped to the drill table by steel clamps. Otherwise the drill will wander, destroying the accuracy of the hole

4—Back off the drill, and see if the drill is cutting concentrically with the prick punched circle.

5—If not, using the cape chisel shown in Fig. 8 and cut a groove on the side which it is necessary to "draw the drill" to make it cut concentric. Ordinarily the cut is made the depth that it is desired to draw it.

6—Start drill again, *still using hand feed.*

7—If not cutting concentrically, repeat until the hole is central with the prick punch marks.

8—When the hole is concentric loosen the clamps.

9—Bring drill down into the clean conical hole. Reclamp work to drill table.

10—Finish hole with power feed.

Note—All drawing that is to be done to a drill MUST be done before the drill has cut its full diameter. It cannot be done later.

Often a drill will cut a triangular hole, as shown in Fig. 11, usually due to too light pressure. This may be corrected by cutting in the manner illustrated.

Previous Articles

Subject	No.	Date of Issue
Overland — Main and connecting rod bearings	1	Dec. 13
Cadillac—Cam and fan-shaft driving chains	2	Dec. 20
Maxwell—Rear axle repairs	3	Dec. 27
Chevrolet—Clutch repairs	4	Jan. 3
Borg & Beck—Clutch adjustments	5	Jan. 10
Hudson—Oil pump adjustments.	6	Jan. 17

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ANGLES OF THE LAW



Would Require Licensing of All Demonstrators

By George F. Kaiser

IT has just been decided in the Orange County Court, New York, that under the State highway law which declares that no person shall operate or drive a motor vehicle as a chauffeur unless he has a chauffeur's license, a man employed by a gas company and using an automobile in his business of "trouble hunting" is a chauffeur and must obtain a chauffeur's license.

A man was convicted in the justice's court for operating an automobile without a chauffeur's license. He appealed to the county court on the ground that he was an employee of the Central Hudson Gas & Electric Co., and that in his duties as a "trouble hunter" he used an automobile furnished by the company to go around from place to place, but that he did not drive the car as a chauffeur for hire.

What the Law Provides

The court cited section 289 of the New York highway law, which provides,

> "No person shall operate or drive a motor vehicle as a chauffeur upon a public highway—unless such person shall have complied in all respects with the requirements of this section,"

and also section 281 of the same law providing that:

> "The term chauffeur shall mean any person operating or driving a motor vehicle as an employee or for hire."

The Court said that the man was undoubtedly included within this provision of the law as he was an employee of the gas company though he was not primarily hired to drive a car or perform a chauffeur's duties.

Contrary to Previous Decision

The decision in this case is directly contrary to that of People vs. Dennis, 161 New York Supplement, where the county judge of Schenectady County held that the employee did not have to have a chauffeur's license.

If this Orange County decision is followed it will mean that all automobile salesmen, demonstrators, mechanics, traveling salesmen and drummers, etc., will have to take out a chauffeur's license or run the risk of being convicted of a misdemeanor.—People vs. Fulton, 126 New York Supplement, page 125.

This Contract

"THIS contract," says Mr. Kaiser, "is not binding."

And so you do not use it.

And save yourself hundreds of dollars.

And a lot of worry.

That is the kind of service Mr. Kaiser can give you. Send along those contracts so he can interpret them for you.

COMMISSIONING A BUYER

When a person gives money to another person to buy an automobile and the latter buys it and then sells it instead of turning it over to the person furnishing the money, as agreed, the latter may get back the property by a writ of replevin, says the Superior Court of Delaware. If, on the other hand, the person furnishing the money simply gave it to the borrower so that he could buy the car for himself, and he then sold it, the person to whom it was sold would have the absolute right to hold it and the lender would not be entitled to possession.—McClemy vs. Brown, 99 Atlantic Reporter, page 48.

Lien Comes First in Wisconsin

The Supreme Court of Wisconsin has just decided that a garageman's lien comes before a chattel mortgage given as a part of the purchase price of the car.

The Wisconsin law provides:

> "Every mechanic who shall make, alter or repair any article of personal property at the request of the owner or the legal possessor of such property shall have a lien thereon for his just and reasonable charges therefor, and may retain possession of such property until such charges are paid.—Stat. 1915. Sec. 3343."

Suit was started to get back a car by a dealer to whom $50 was still due under a purchase money mortgage. The car was in the possession of a garageman who had made repairs on it at the request of the owner, and to whom there was $162.10 due. The Court held that the garageman's lien came first and that the dealer in order to seize the car would have to pay the garageman's bill first.—Smith Auto Co. vs. Kaestner, 159 N. W., 738.

Has No Lien.

Editor Motor World: We wish to be advised in regard to a matter that came up a few days ago in our repair department. A stranger to us from a neighboring town called on us to go out in the country and get his car and put it in good condition. We found the whole rear end given out and had to order practically a new transmission and differential. After the car was finished we found that the man who represented himself as the owner was not financially responsible and that another party had a reservation of title on the car.

The car has been in our garage now for about a month awaiting payment for the repairs. Could we sell the machine for the repairs and not be in trouble with the owner? Could the real owner come to our place and take the car without paying the repair bill?—R. G. Edgerton & Co.

As there is no specific garageman lien law in Virginia, like in some of the other States, giving a dealer a lien on a motor car, even if the owner can take it out from the garage at his pleasure, you have no lien if the car was kept on live storage.

You have a so-called common-law lien for labor bestowed in improving personal property in your State, and I think you are justified in holding this car on which you made repairs providing you have held it continuously in your possession since the repairs were made.

Need Not Record Conditional Sales in New York

In New York it has been recently decided that an unrecorded contract of conditional sale is not void as to creditors, although it is void as to subsequent purchasers and mortgagees. Under this decision if a dealer sells car on conditional bill of sale and fails to record the contract he may recover what is due him even though the party to whom the sale is made has debts.—In re Hamill, 236 Fed., 292.

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Do It This Way—

···QUERIES ANSWERED···

Speedy Maxwell Built by Dealer

Editor Motor World: This machine was not built for a racing car but for a stunt car and service car together, although we have never been defeated by but one car, and in this race we turned over twice on the last lap of the 10-mile event, with the other car leading by possibly 100 ft. We have been able to get 68 m.p.h. out of it, and do not believe we have ever had it to the limit on account of the road conditions around here.

We have a regular 1916 stock car chassis with the following changes:

We turned the spring hangers over on the rear axle, putting the springs under the axle. Took the motor down and balanced the shaft and flywheel. Also cut the starter gears off the flywheel. We used Lynite pistons, perfectly balanced. We also balanced the rods and piston pins.

We are using a Master carbureter, which has given us perfect satisfaction, but the change that made quite a difference was Burd high compression rings. We were only able to get about 60 miles out of it before installing these rings.

We set the cam gear up two teeth ahead of the regular setting, but cannot state as to whether this was any benefit or not, as we did not try it with the original setting. We built the body ourselves, which was a very small job, although we had to buy the gasoline tank and seats.

We have been able to get 32 m.p.h. on low speed. Of course on this speed there is some vibration, but on the high gear you can chase it as fast as it will run with no vibration at all.

We have an extra supply of oil that we carry in one compartment of the gas tank, which we feed to the motor with a pump, shooting it in at the front end on right side.

We have Houk wire wheels 32 x 4, but if I was buying again would get either 30 x 4 or 30 x 3½ wheels instead.

The dummy hub on the rear to carry the extra wheel was made from an old inner hub with a pipe coupling shrunk on to cut the threads on for the hub cap. The cowl is made of 20-gage galvanized iron, all in one piece, bought of our local tinner.

We used a large piece of building paper to make the pattern for our body.

The Progressive Sheet Metal Works, of Cincinnati, O., made our tank.

We placed two priming cups in the openings of the intake manifold and arranged a lever from the inside of the dash so we could open them both after the motor gets up some speed, as this extra amount of air gives the motor more speed.

We took the exhaust line off and cut the top part off and had an acetylene welder add to it until it was almost twice as large as the original manifold. This was done to keep the motor cool.

The Garford Engineering Co., of Elyria, made the pistons for us, and they are of the crown head type, with about .015 clearance.

We purchased a new piece of shafting and made the steering shaft about 8 in. longer and set the steering column back.

We use Hartford shock absorbers.

The idea of dropping the rear springs below the axle was to lower the car, and by doing this it gives almost a perfectly straight line drive.

By dropping the rear end of the car it tilts the top of the front axle back, which makes much easier steering at high speed.

If any one wishes any special information on this car we will gladly give it to them if they write us.—Rogers Garage & Light Co., Jackson Center, O.

Cash Garage Business Better for Customer

Editor Motor World: Will you kindly give me any information you can regarding operating a garage business on a strictly cash basis? Do you advise the use of coupon books?—Subscriber.

You should sell things by coupon as well as for cash.

The Euclid Square Garage in Cleveland is one of the largest garages in the country, and it has been operated on a cash basis from the start. Accessories are sold for cash or by coupon, the books costing $5 or $10, and coupons of various denominations from 5 cents up to 25 cents are contained in each book.

We do not believe that any of your customers will object to paying cash if you will only take the trouble to explain to them fully and very tactfully why you have decided to adopt the cash plan.

One of the biggest arguments in favor of running a business on a strictly cash basis is that it reduces expenses, enabling the merchant to lower his prices, and it is a much more satisfactory way of running a business from the standpoint of the customer inasmuch as each transaction is closed at the time it is begun instead of being postponed a month or maybe 2 or 3 months or more.

If a man buys a half dozen articles, and you are operating your business on a credit system, these things are charged and the bill is sent him at the end of the month. He may, through some oversight, not pay the bill that month.

At the end of the month he is sent another statement, and in looking it over before writing a check he notices that he has been overcharged for one article, or at least he thinks he has been overcharged. A dispute arises. Possibly you are able to convince him that the

LETTERHEADS

Below is the improved letterhead designed by Motor World at the request of Dexter Garage and Machine Shop. It is neater and more attractive than the original shown above

DEXTER GARAGE AND MACHINE SHOP

COMPLETE MACHINE EQUIPMENT FOR AUTOMOBILE REPAIRS

VULCANIZING - GASOLINE - OILS - ETC.

J. W. BAGEARD DEXTER, N. Y.,_____191

Dexter Garage and Machine Shop

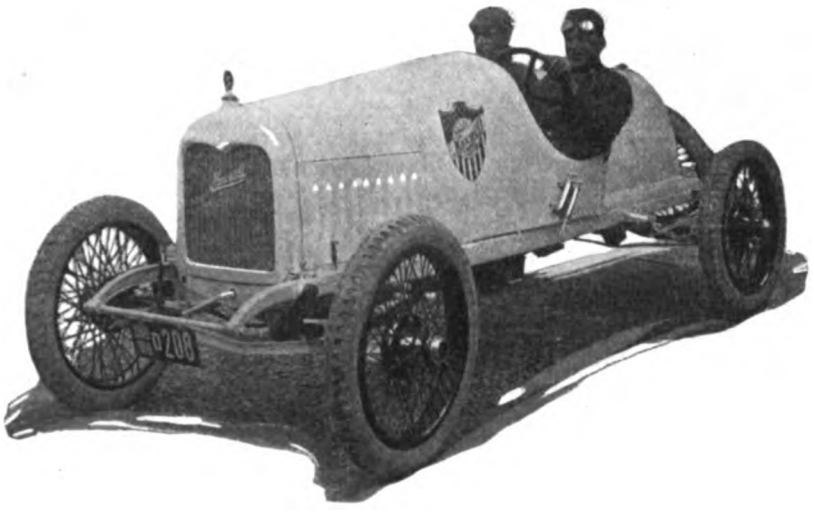
J. W. BAGEARD

Automobile Repairs—Vulcanizing

Gasoline, Oils and Accessories

Dexter, N. Y.,

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Stock Maxwell chassis modified to give high speed

charge is correct, but you are running a big risk of making this customer angry at you, with the result that you may not only lose his trade, but that of several of his friends.

On the other hand, if he pays cash for this list of articles he looks at the price of each at the time they are bought, and if he thinks he is charged too much for one article it is easy to rectify the matter then and there.

Your customer may claim that it is too much trouble to pay cash every time he wants some little thing, but if you are operating a credit business there would be just as much trouble. If you are a good business man you would require the customer to sign the sales slip after it has been made out, and this would be just as much work, we believe, on the customer's part as it would be to dig down into his pocket for the cash and wait for his change.

If you are a good salesman you can sell your customer the cash idea of doing business. The people storing cars in the Euclid Square Garage prefer this system over the credit method. They are strongly in favor of it, although they kicked when it was first installed.

Take the trouble to explain to each customer that it is easier for him to pay cash. You should have no difficulty. This is the big selling point of the cash system as compared with the credit system, that it is easier for the customer. You might think that possibly some automobile owners would prefer to have charge accounts inasmuch as they might not have the money in their pockets, but "certainly this would apply to none of your trade" and very few of your customers will want to make an exception in their own case to such a statement if you make it in an off-hand manner.

Thus you see the only man who really suffers is the dead beat, and he is the man you don't care about any way, so there is everything in favor of the cash system.

The cash method of doing business is popular in Detroit, and the largest garage in Baltimore, the Mid City Garage & Supply Co., has recently opened up on a strictly cash basis.

Why Frost Gathers on the Carbureter

Editor Motor World: I have been having trouble with a model L Schebler carbureter on a late 1911 Cadillac. It has a hot water connection. Frost gathers on the inside of the manifold and freezes the hot water jacket till it stops the motor. This motor works better than the average motor in warmer weather.—L. B. Robinson, Wasco, Ore.

Freezing of your waterjacket is mainly due to poor circulation in the pipes leading to and from the waterjacket. It is possible that these may be clogged or dirty, or the jacket itself may be dirty. This is most likely the case, if this is the first winter the trouble has appeared. Otherwise we would say that the trouble was due to some defect in the installation of the waterjacket pipes.

If no relief is obtained after inspecting the installation, we should advise you to use a hot air stove instead.

The gathering of frost on the carbureter or the manifold is due to two causes: First, the expansion of the air as it is drawn through the carbureter reduces its temperature, and also the evaporation of the gasoline reduces the temperature of the air. These two factors, combined with the cold weather, explains why the waterjacket freezes.

Vulcanizing Business Profitable If Run Right

Editor Motor World: How about vulcanizing as a separate business? That is, separate from the garage business. I would include a good line of tires and accessories in my shop.

Now, to complicate matters, I know nothing whatever about tire repairing. Which is the best way to learn it, in a shop or by correspondence? There are several firms advertising their vulcanizing machines, and say they use both methods of teaching tire repair.

I have no intention of starting up in Texas, but thought of either Huntington, Ind., or Dubuque, Iowa, as a town where the opportunity would be good. Neither town is my home town, however. Huntington is a town of about 12,000, while Dubuque is about 25,000.

How much money would it take to start a small plant, say a capacity of about ten casings at a time?

The qualifications I possess are, a good foundation in advertising, good personality and the determination to succeed, caused by necessity.—Edward J. Brandehamp, 2d Ind. Inf. Band, Llano Grande, Tex.

You ask whether vulcanizing business would be a profitable investment, and we can answer without hesitation, "Yes."

The business will be profitable in direct ratio to the manner in which it is conducted. Its success will not depend to any great extent upon the size of the community in which it is located, but its success will depend upon the ability of the proprietor to go out after the business and get it.

The man in a small town who will get out and hustle has a thousand times greater opportunity to succeed than a man in a bigger town who sits by and hopes that trade will come to him. It is a mistaken idea to imagine that it is necessary to locate in a big city. Quite profitable vulcanizing businesses have been built up in almost minute communities and trade has been drawn from a radius of 20 miles—this necessitated, of course, that the proprietor go out and get the business.

It is quite possible for a man to establish a vulcanizing business and then to arrange with a number of garages in his vicinity to do all of their vulcanizing work for them. It may be possible to give a small service car or perhaps a motorcycle and make the rounds of the various garages once a day to collect tubes and cases for repair and deliver those that have been repaired.

Another way would be to have the garages deliver their repair work at your shop and take away the finished work. Possibly you could start this way and after the business had been started and built up, if you could stand the additional overhead you might add a service car or a motorcycle.

Another mistaken idea is that it requires extensive capital to launch the vulcanizing business. Those businesses which to-day are most successful are those which started small and grew. You will not find any extensive businesses which started big. Remember the saying that "Great oaks from little acorns grow." Start small and work hard, expand business and soon it will be so big that it will be the envy of all your competitors. No more than $50 need be expended in the way of equipment. For this you can get an outfit which will take care of 12 or 14 casings and a couple of hundred tubes a day—enough to keep two or three men busy all the time. For about $15 more you can get an equipment with double capacity. The investment is small, the cost of operation is low and the margin of profit in repair work is sufficiently great to insure financial success in the venture if it is run with strict attention to business.

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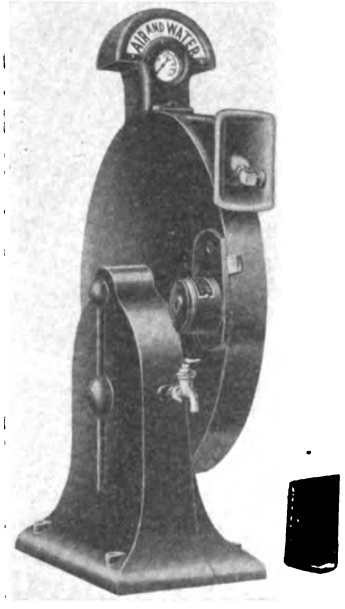
Accessories & Supplies



AIR AND WATER PAY STATION

Electric Appliance Co., Chicago. PRICE, free air and water station, $70; prepayment air and water station, $75.

Based on the idea that the average motorist would rather pay for compressed air and water than be under any obligation to the garageman, the Eco pre-payment automatic air and water station allows the motorist the use of air and water after dropping a nickel in a slot. The air hose is on a reel and this cannot be unwound until after the money is deposited. As much air as desired may be used. When the hose is released it is automatically rewound and cannot be drawn out again until another nickel is put in. The device also has a water connection for filling radiators. There is a gage at the top to show the air pressure in the tank and the sign at the top may be electrically lighted at night. The same apparatus is supplied without the slot machine feature. The hose is completely enclosed. Dimensions, 24 in. wide, 38 in. high, base 10 x 18 in. A simpler model for free air service only is suspended from a ceiling bracket, the advantage being that it keeps the hose off from the floor. Equipped with a spring it sells for $37.50 and with a counterweight, $30.

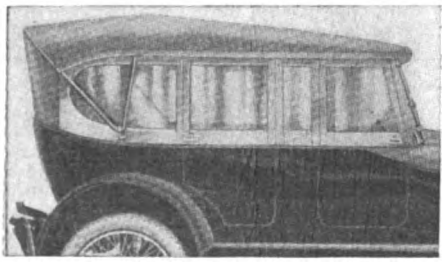


Air and water pay station. Dropping a nickel in a slot releases the air hose

MILLER RUBBER DISPLAY CASE

Miller Rubber Co., Akron.

In order to encourage dealers to display accessories, the Miller Rubber Co. has brought out a display case for tire accessories. It is made of 20-gage rolled steel and has a mahogany finish. A glass finish protects the contents so that it always looks clean and fresh. The lower part is arranged for storage of extra accessories. It stands 26 in. high and is 24 in. wide at the base. The case is given free to customers.



Glass sides fit into the one-man top to form a closed car

WINTER TOP

Auto Cape Top Co., Chicago.

Glass windows are supplied for converting the ordinary car into a closed car. The standard top is retained. The touring car doors are converted into full length closed car doors by the addition of an upper member of glass. The design is light in weight and weather tight. It can be made to order for any car.

HARLAN AND AMES ENGINE TESTER

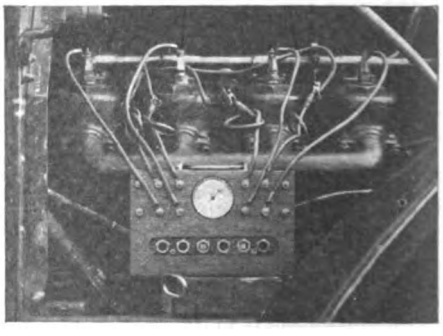
Harlan & Ames, Watsonville, Cal. PRICE, two units, $25; four units, $35; six units, $50.

This is a small box-like instrument 6 x 8 x 4 in. for testing ignition. It has places for 2, 4 or 6 spark plugs which may be tested under air pressure and quickly indicates where the trouble is, it is said. Such difficulties as faulty contact breaker, short circuits, defective armature bearings, faulty spark plugs and so forth, are determined.

WARNER TILTING WHEEL FOR FORDS

Warner Gear Co., Muncie, Ind. PRICE, $1.50.

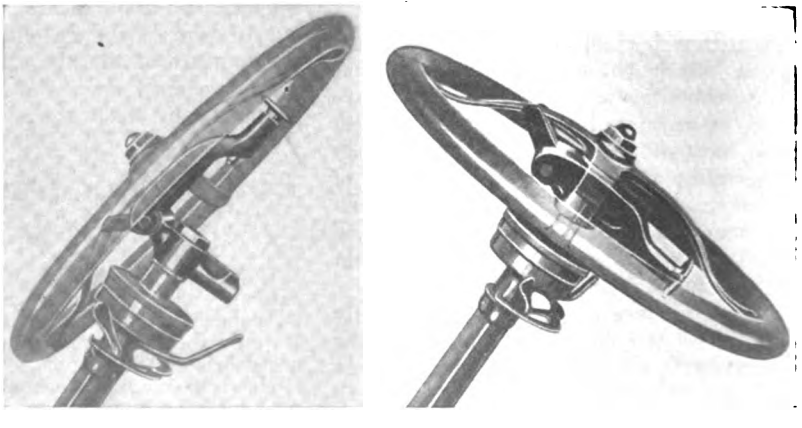
This consists of two hinged castings to make the standard Ford wheel into a tilting wheel. The lower casting is fastened to the steering post and the upper to the steering wheel. A spring closed latch securely holds the wheel in driving position. The wheel is tilted by pulling the latch.



Harlan & Ames engine tester

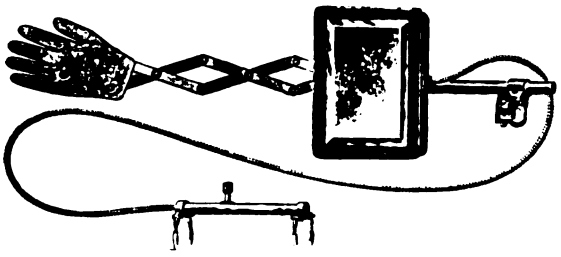


Miller tire accessories may be shown in a special case furnished by the company

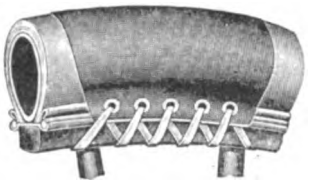


Warner tilting wheel for Fords—a special hinge is placed between the wheel and the steering shaft

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Automatic hand traffic signal



Keystone blowout patch



Comer semaphore safety signal



Broomell lock steering wheel

KEYSTONE TUBES

Keystone Rubber Mfg. Co., Erie, Pa.

Gray or red tubes are made of several plies of thin selected para rubber, slightly compounded to effect a cure and overcome rapid deterioration. The valve base is built of several plies of tube stock with special fabric between the plies and vulcanized into the tubes in the same heat the tube is vulcanized, making the tube much stronger than if the valve base was only cemented on. The tubes are made by the roll-up laminated system. Tire accessories include one-piece no-cement patches, reliners, blowout patches, rubber cement, hook-on boots and army duck patches. The no-cement patch is a one-piece design in which one side is cured and the other is uncured. The uncured section is very adhesive and the friction heat of the tire causes the patch to adhere firmly so that the older they get, the tighter they stick.

COMER REAR SIGNAL

Auto Signal Co., Chicago. PRICE, $12.50.

This signal consists of a semaphore with the word stop on it which swings up into view when a button is pressed by the driver. The semaphore is red with white letters and is illuminated at night. It is mounted in a special tail lamp and license bracket.

BROOMELL LOCK STEERING WHEEL

A. P. Broomell, Hartman Bldg., York, Pa. PRICE, $25.

This is a special steering wheel with a lock set in one of the spokes so that when the lock is set, the wheel revolves loosely on its hub. It is a combination lock which may be changed at the will of the owner and there are over three million combinations. When the wheel is in use, it is connected by a ¾-in. bolt and cannot come out of its socket except when pulled out intentionally, it is said. The standard wheel is 18 in. in diameter with a corrugated black walnut rim, block enameled spider and nickel plated lock. A liberal discount is offered to dealers.

SAVIDGE LIGHT TRANSFORMER

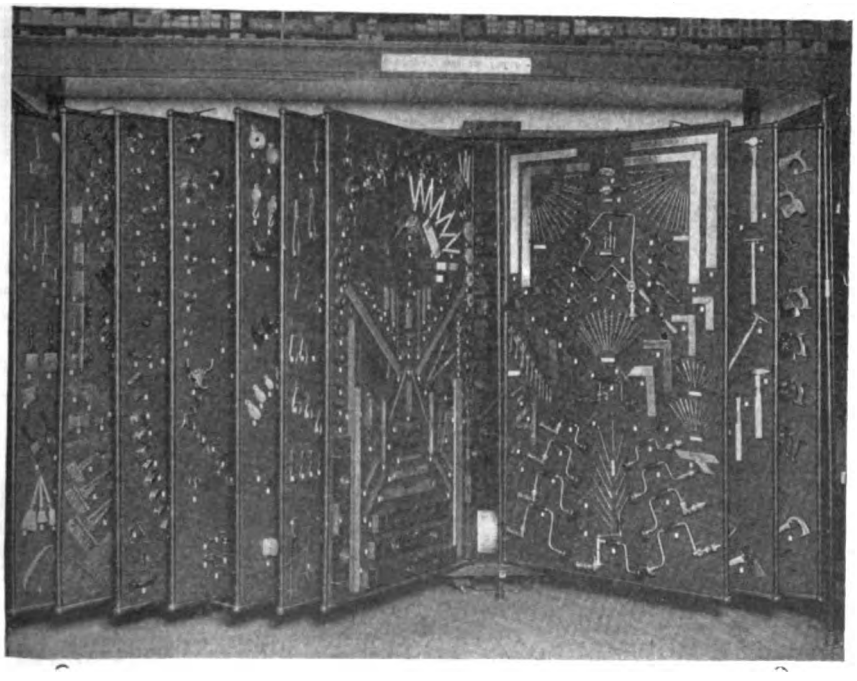
The Savidge Co., Indianapolis, Ind. PRICE, $6.50.

An automatic switch which throws all the current through one Ford headlight below a certain speed, thus giving one bright headlight instead of two dim ones. It is mounted in a water-tight box on the steering post directly under the wheel and has a dimming switch so that the lights may be turned down regardless of the position of the automatic switch. It is also provided with a connection for a spotlight. The installation is simple.

AUTOMATIC HAND TRAFFIC SIGNAL

Consolidated Sales Corp., 733 Wells Bldg., Milwaukee. PRICE, $7.50.

A red hand is extended on the side of the car by simply pushing a button below the steering wheel. When not in use the hand is concealed in a rear view mirror mounted on the windshield. It is designed for closed cars and open cars which are operated in winter with the side curtains up. It is easy to install.



Universal Display Fixture Opens Like a Book

A new display fixture, incorporating many features, is being marketed by the Universal Display Fixtures, 131 West Tweny-fourth Street, New York. In form the stand resembles a large book, with the aricles to be displayed secured to each side of the swinging wings. An idea of the capacity may be obtained from a description of stand No. 105. This stand has four wood-filled swinging wings, size 26 x 45 in., and may be fitted with ten more wings, giving a complete display space of 224 sq. ft., thus saving much shelving and displaying the goods in an attractive manner. Many other sizes and styles are made, the prices running from $30 up.

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Valve Tools—Lifters and Grinders

Masco

The radium spring or valve releaser may be used for compressing or expanding, as desired. It consists of two arms which are pivoted to a single piece at one end, and at the other are two V-shaped jaws which compress the spring. In the center there are two link members which are attached to a central rod which passes through the single end piece and is threaded to take a butterfly nut; thus, by screwing the nut, the position of the jaws is determined. Price, $1.—Milwaukee Auto Specialty Co., Milwaukee.

Kraemer

This is a double-jawed device pivoted at the back and expanded or contracted by a butterfly nut. It may be used for compressing or expanding, as desired. It is adjustable from 9/16 to 1¼ in. Price, $1.25.—U. S. Compass Co., Cedarburg, Wis.

Gemco

Two types of valve lifting tools are made. One is chain valve spring release, consisting of a U-shaped hook, caught onto the cylinder head, and carrying a chain that offers a fulcrum for a valve lifting lever. The lever has a narrow fork at one end and a wide one at the other to accommodate all valves. The other tool is of the scissors type, pressed steel, and provided with a ratchet lock that permits the spring to be held in the compressed position. The chain toool sells for $45 per 100, the scissors tool for $42 per 100.—Gemco Mfg. Co., Milwaukee.

C. P.

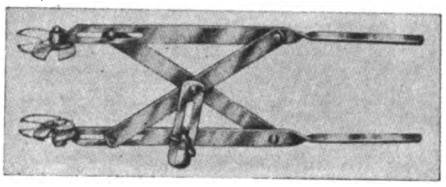
This device consists of two members pivoted at one end and provided with U-shaped openings at the other to fit around the valve stem. The position of the two U jaws is determined by a screw which goes through the two members. Price, $1.—Clinton Machine Works, 460 High Street, Clinton, Mass.

Eclipse

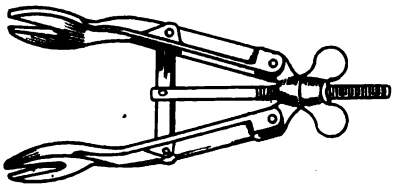
This is a scissors type, in which the two members are locked in position by a ratchet, which is mounted in one and extends through an opening in the other. Price, 40 cents. The flexible valve remover consists of a hook and chain and a lever. Price, $1 and $1.50, depending on length of chain, which may be 12½ or 17 in.—Metal Stamping Co., Long Island City.

Illinois

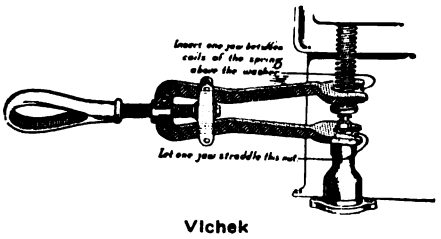
There are two parallel members which carry the jaws, which are pivoted so that they may be swung to the right or to the left. The two parallel members are connected by two other members forming an X, the two ends of the X being pinned to the parallel members, the other two ends sliding in slots in the parallel members so that by squeezing the handles the jaws are brought closer together, and there is a butterfly nut by means of which the tool may be locked in any position. Price $1.—H. F. Paro, 719 Michigan Ave., Chicago.



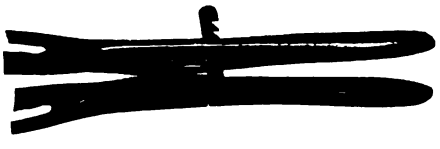
Illinois



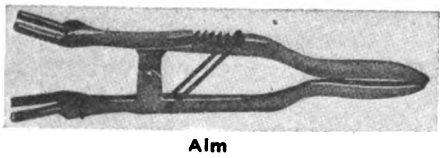
Masco



Vlchek



Gemco



Aim



Eberhard

Vlchek

This is a scissors type, in which two arms are pivoted to a single piece through which a screw runs which operates the arms. In the new models, the jaws have been materially strengthened and the faces of the forks have been corrugated to prevent slipping. Price, $1.50.—Vlchek Tool Co., Cleveland.

Aim

This tool consists of two members, which are pivoted to one another, one pair of ends being forked to go round the valve stem and the other forming the handle, the adjustment being set by a rack-and-wire arrangement. Price, $2.75 per dozen.—Auburn Ignition Mfg. Co., Auburn, N. Y.

Eberhard

This tool is made for all cars, and there is a special model for Fords. It consists of two forked members, which are pivoted and are held in position by a ratchet, which is pivoted to one handle and extends through a slot in the other. Price, 44 cents.—Eberhard Mfg. Co., Cleveland.

Bryant

This tool consists of two jaw members, one of which is mounted on a ratchet post at right angles and the other on a sleeve which slides on the post, and the relative position of the two is adjusted by turning the nut which operates the screw on the rack. It may be used for compressing springs either on the motor or away from it. Price, $2.—Stevens & Co., 375 Broadway, New York.

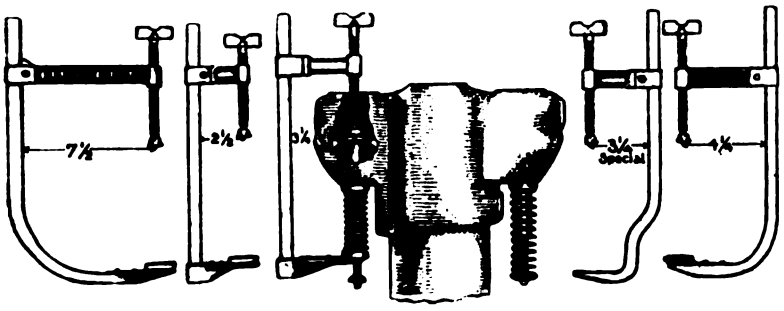
Hallbauer

This device consists of a C-shaped member, the lower end of which forms the fork, which raises the valve spring seat, and the upper member carries a cam and sliding plunger, which bears against the valve or the valve cap, and when operated compresses the valve spring. Price, $2.75.—W. M. Hallbauer, 1537 Wellston Ave., Wellston, Mo.

Halladay

A valve lifter for Fords which is supported by a leg which rests on the crankcase flange, and which is prevented from slipping by a hook which goes around the valve spring itself. It is a simple tool, and cannot slip. Price, 60 cents.—L. P. Halladay Co., Streator, Ill.

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The Mertz is built in several styles to suit different motors

Mertz

This tool is roughly C shaped and is adjustable to all makes of cars. It consists of three parts, the fork, which slips under the valve spring seat and which curves up so that a horizontal arm may slide up and down on it. At the end of this arm there is a screw which engages the top of the valve, thus when the tool is in place, the spring is compressed by screwing down on this member. It is made in a variety of shapes. Price, $2.—H. B. Mertz Co., 1408 Rutherford Ave., Pittsburgh.

Perfect Handle

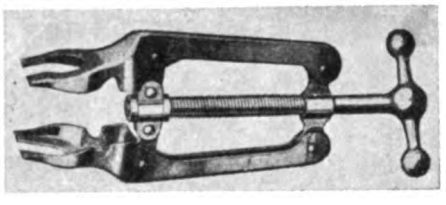
This is a chain-and-lever type of valve-spring remover in which the chain is attached to a hook which may be anchored at various points on the motor, the chain hanging down over the side of the cylinder casting and carrying the valve lever, which is forked and provided with a wooden inlaid handle, which gives it its name. There is a hook which enables the position of the lever on the chain to be adjusted.—H. D. Smith & Co., Plantsville, Conn.

King

This tool is of the lever-and-chain type, and is designed for all makes of cars. The lever is yoked to fit around the valve stem, and is long, and provided with eight notches so that different leverages may be obtained. The chain is supported by a carrier which slides on a horizontal member, the end of which hooks into the valve opening, incidentally holding the valve down in place. Price, $1.50.—King Specialty Mfg. Co., Brookline, Mass.

Ideal

A reciprocating motion is given to the valve, although the turning of the crank handle is continuous in one direction. It is provided with bits of different sizes. The complete outfit includes the valve-grinding spring, O. K. compound and one little Dandy scraper. Price, $5.—Ideal Valve Grinder Co., Los Angeles.



Turko valve spring lifter

Nasco

Particularly for hard valves, such as tungsten, this is a rather elaborate device consisting of a grinder, which may be belt driven and a chuck for carrying the valve and holding it against the flat surface of the grinding wheels. It is adapted to all sizes of valves, and reseating of the valve seats is done with the use of special milling cutters.—National Auto Specialty Mfg. Co., Tama, Ia. Stewart & Co., 171 Broadway, New York, selling agents.

Curko

This tool is operated by rolling between the palms of the hands. It is supplied with a universal joint so that it is not necessary to stand directly over the work. There are various types of bits to fit different styles of valves. Price, $1. The valve-grinding set at $2 also includes a valve remover and Special valve grinder for Ford cars sells for 75 cents and a valve remover 25 cents.—Currier-Koeth Mfg. Co., Coudersport, Pa.

Merry

The gear and sector type of valve grinder, which is operated by two handles resembling large shear handles, designed for all makes of cars, and may be used in inaccessible places. It will turn the valves from 150 to 200 revolutions a minute. A complete out-and-in stroke rotates the valve several times. Price, $2.50.—Edward Merry, 395 Allen St., Springfield, Mass.

Goodell-Pratt

The feature of this tool is that while the crank handle is turned continuously in one direction, an intermittent reciprocating motion is transmitted to the valve. Various types of bits are furnished to suit different valves. Iron frame, $3; aluminum frame, $5.50.—Goodell-Pratt Co., Greenfield, Mass.

Nelson

This valve grinder, which is for Fords exclusively, consists of a revolving head, below which the bit which engages the valve is attached and a handle provided with a ball joint for supplying the motion.—A. Nelson Mfg. Co., Chicago.

Mosco

The main body of the device constitutes a grip for the left hand while the right operates the handle at the side. Forward motion is by turning the handle and reverse motion is by a spring. Price, $1.50.—Motor Spcialties Co., Waltham, Mass.

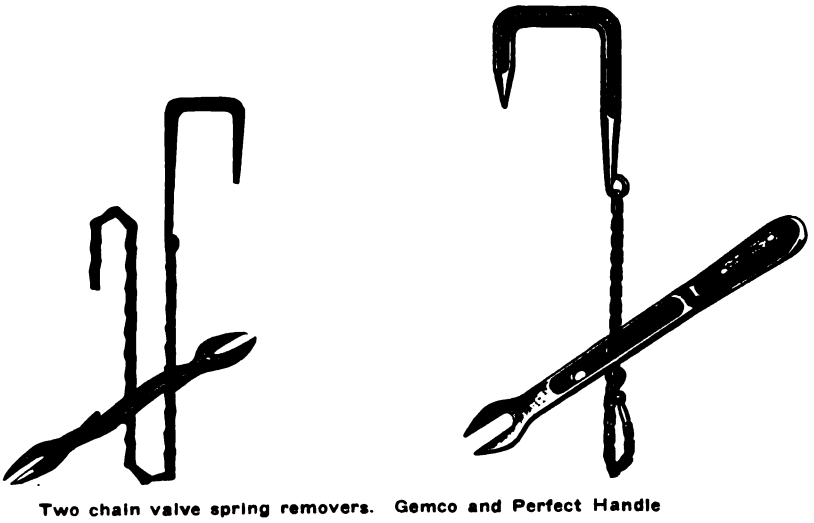
Universal

This tool employs the brace-and-bit principle, the brace being long and pro-

Valve Grinders

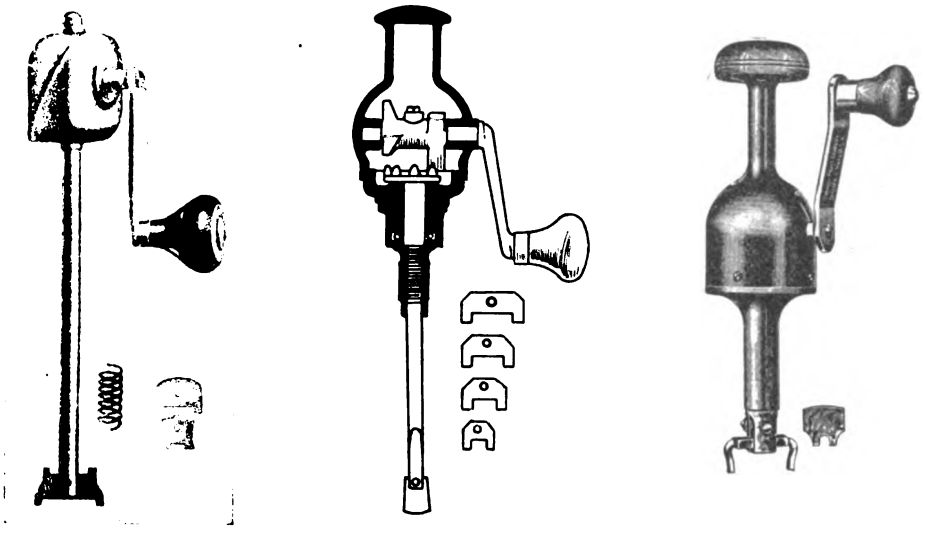
Uniq

There are three styles of tools, all for the Ford. A combination tool reseats, faces and grinds the valves and seats. Price, $1.50. Another type is designed for grinding, and is provided with a bit which is pivoted. Price, 25 cents. In addition there is an old-style grinder, used on some of the old Ford models. Price, 25 cents.—C. Spiro Mfg. Co., New York.



Two chain valve spring removers. Gemco and Perfect Handle

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Three crank-driven valve grinders—Marvel, Ideal and Goodell-Pratt

vided with a universal joint at its lower end, where the bit attaches to the valve. It is designed for all types of valves. Price, $2.50.—Uniersal Valve Grinder Co., Almond, Wis.

Apco

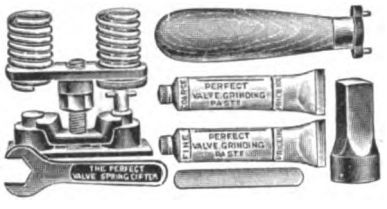
This valve grinder is a simple device designed for Ford alone, and consists of a bit with two prongs on it to engage the top of the valve pivoted in a brace which has a ball and handle for applying the pressure and an offset lever for rotating the valve. The carborundum valve grinding compound and the valve-removing tools go with the outfit, which sells for 60 cents.—Auto Parts Co., Providence.

Marvel, Jr.

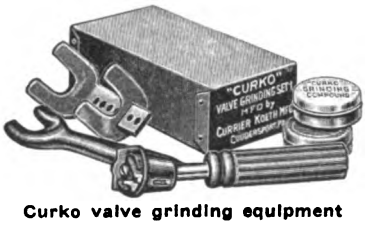
This instrument is provided with a crank, and there are several styles of bits to suit different valves. The bits are flexibly mounted so that it is not necessary to keep the instrument exactly vertical. The universal type is $3.50 and the Ford style $1.50.—Marvel Accessories Mfg. Co., Cleveland.

Turko

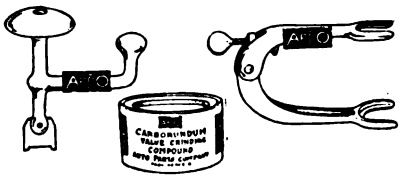
A continuous rotary crank type in which the grinding makes one step forward and return for every revolution of the crank. Seven complete revolutions of the crank carrying the bit once around the valve seat. The bit is loosely attached to its shaft so there is room for play. Price, $2.25.—Turnbull Mfg. Co., Wilmington, O.



Smith valve grinding set



Curko valve grinding equipment



Apco valve grinding outfit for Fords

Perfect

This outfit is for Ford cars exclusively, and comprises complete equipment for grinding Ford valves. It includes not only the grinding tool itself, which consists of a wooden handle, with metal prongs on the lower end to engage the valve, the handle being rotated between the palms of the hands, but also a simple device for holding up the springs of two valves at once so that both keys may be removed at once. Coarse and fine valve grinding valve compounds, wrench socket for cylinder-head bolts and gage for adjusting pushrods. All valves can be removed and ground without disturbing the manifolds or the carbureters. Price, $1. Valve-spring lifter alone, 50 cents.—Winton L. Smith Machine Works, Newark, N. J.

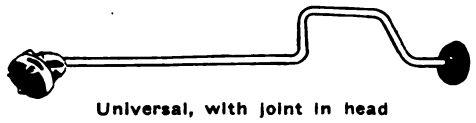
K. & S.

Socket wrench set consisting of a 7-in. ratchet handle, 2 screwdriver bits, 7-in. extension bar, 7 sockets, 5/16 to ⅝ inclusive, is put up in a neat cloth case, price $2.50. The hex all-socket wrench, price $1.50, consists of an L handle and 7 sockets. Sockets are held by a friction ball, and when not in use are packed on the handle.—R. S. Sedgley, 2313 N. 16th St., Philadelphia.

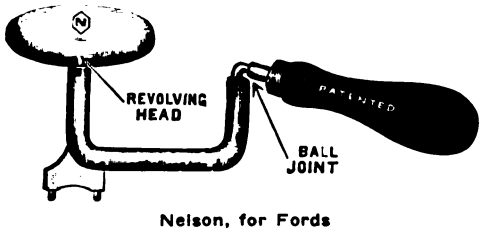
Wrenches

B. & S.

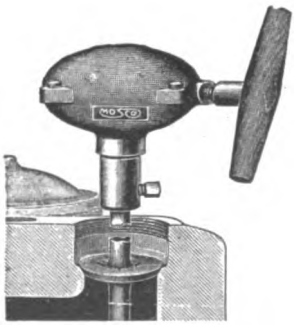
These wrenches are made in all styles from the smallest pocket wrench to the largest adjustable, non-adjustable, double and single pipe and ratchet wrenches. Solid wrenches and friction wrenches are made up in sets for motor car service; drop forgings are used in every case and practically all wrenches are hardened. The different styles include single and double ended engineers' wrenches, S wrenches, adjustable S wrenches, monkey wrenches, alligator jaw wrenches. Allen friction socket wrenches are put up in sets, the largest of which is No. 31, and consists of one friction wrench, spark plug socket, long and short extensions, screwdriver, universal joint and 30 pressed steel sockets. Price $10. The smallest



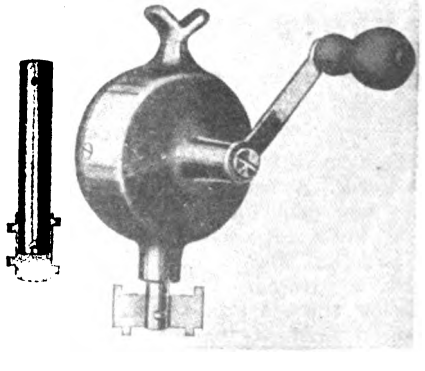
Universal, with joint in head



Nelson, for Fords



The Mosco is operated with a twist of the wrist



Turko crank-operated valve grinder

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set is for Fords, and includes friction wrench, spark plug socket, long and short extensions, eight pressed steel sockets to fit Ford nuts and cap screw. Price $5.—Billings & Spencer, Hartford, Conn.

Lakeside

The Utility socket wrench set is of particular use to the repairman. It is the leader of a complete line of wrenches. It consists of three wrenches, all of which are adjustable. It may be used on all shapes and kinds of nuts immediately; there are no screws to adjust and the tool will grasp any nut instantly and hold without slipping. It is said that it will not mutilate the nuts. Price $2.50. Other types include single and double end engineers' wrenches, set screw wrenches, S wrenches, adjustable wrenches of various types, alligator jaw wrenches, etc. — Lakeside Forge Co., Erie, Pa.

Imperial

This is an adjustable jaw wrench which has the additional feature that the whole jaw is pivoted in the handle and may be set at any angle. The claims made for it are that it will do everything that a monkey wrench will do, yet it takes the place of an adjustable end wrench, and in most cases it may be used instead of a solid or S wrench, that it will do much of the work of the socket wrench, in short, that it may be used almost universally.—Imperial Tool Co., Bloomington, Ill.

C-M-B

Socket wrenches are manufactured in a variety of styles. A popular wrench set consists of wrench handle, universal joint, extension, 10 sockets and fiber case. Price $3.20. A set for Fords with same equipment sells for $4. Adjustable handle ratchet wrenches, special spark plug wrenches and adjustable jaw wrenches are also manufactured, as well as socket wrench sets, both larger and smaller than those described.—C-M-B Wrench Co., Garwood, N. J.

B. & S.

One-piece drop forged screwdrivers are made in nine sizes, from 5 to 18 in. Handles are of cross shape cross section. An extra heavy model has a square shank 9½ and 10½ in. long. Magazine screwdrivers, Model Q, have four blades sliding into a handle; length closed, 3⅞ in. Finished in nickel with steel or rosewood handle, 50 cents; larger size, 8½ in. long with five blades. A machinist's screwdriver is spring tempered and has a hard wood handle, 7½ to 12 in. over all.—Billings & Spencer Co., Hartford, Conn.

Kilborn & Bishop

The Reliance plier has a universal grip, that is, one jaw is curved so that it forces the work flat against the other jaw. It has two wire-cutting notches and a screwdriver handle. Price, per dozen, $13.50, in black finish; $15 nickel plated. Cold chisels, round-nose chisels and drive punches, as well as adjustable S wrenches, plain S wrenches and a patent wrench known as the Saxon, with a V jaw at either end, one side of each jaw having teeth in it, so that round stock may be handled. It also contains, 5/16, ½ and ⅝-in. dies.—Kilborn & Bishop, New Haven, Conn.

Shims

Kales-Haskel

Shims of brass, steel and copper are made in any thickness from .001 to .125, and these are made in a variety of shapes to suit different needs, such as connecting-rod shims, magneto shims, bearing liners, etc.—Kales-Haskel Co., Detroit.

Laminum

Laminated shims are made to suit all needs. The material is furnished in sheets or in special stampings to suit special requirements. The shim is made of thin brass layers of metal, firmly held together with a metallic binder so that the hole is solid, yet it is a simple matter to peal off one or more layers. Half solid and half laminated shims are also manufactured. The material is made in standard thicknesses from 1/32 to 3/16 and costs from $2.30 to $1.90 per lb. The weights of the sheets running from 4¼ to 12¾ lb.—Laminated Shim Co., 533 Canal St., New York.

Miscellaneous

Lindsay Twin Wire Wheel

This wire wheel is made for trucks as well as pleasure cars, and is produced in all sizes, for either pneumatic or solid tires. The wheel is ordinarily built as a demountable and quick detachable, and in addition the wheel may be demounted the same as any other wire wheel. Since all the hub parts and rim parts are made of stampings it is possible to construct a very strong yet light wheel. The demountable feature is obtained by building the wheel in two sections, which are bolted together, and the demountable rim is removed by taking off one of the wheel sections.—T. J. Lindsay, 708 Fletcher Trust Bldg., Indianapolis.

Hoyt Meters

There is a complete line of voltmeters and ammeters, including pocket types, portable meters, switchboard and cowl meters. The Utility pocket instrument has 0-30 range as an ammeter, 0-10 range as a voltmeter, and when the two instruments are combined the voltmeter range is 0-15 and the ammeter range 0-30. The pocket multimeter comprises a separate voltmeter and an ammeter in a single cylindrical case and is particularly suitable for service station work. It has a double face, one side registering up to 40 volts and the other side up to 4 amperes. The type 445 voltmeter and ammeter is a larger portable instrument with a hardwood base, and there is a wide variation of scales to suit all needs, the prices ranging accordingly from $10 to $20. The type 175 current indicator is designed for cowl installations and registers 30 amperes, charge or discharge. Scales of 10, 15 or 20 amperes may also be obtained. Price, $3. The type 222 voltmeter is two separate meters mounted side by side in one metal casing and is designed for semi-flush mounting. Price ranges from $9 to $10. An interesting instrument is the Hoyt magnetometer, designed for running down ignition troubles on Fords. In addition to having an ampere scale there are four points which are lettered to indicate how well the magneto is operating. Price, $5.—Hoyt Electrical Instrument Works, Penacook, N. H.

Losee Cutout

Made especially for the Chalmers 6-30 and 6-40 by a Chalmers dealer, this cutout is a casting which forms the front end of the muffler. Its location is under the hood and it is readily operated from the cowl. The valve is a damper type and allows free exit of the gases into the atmosphere. Price $10.—J. S. Losee, Hebron, Ill.

Building Boom in Kansas City

KANSAS CITY, Jan. 22—This city is likely to have a building boom on Motor Row this spring. Every available space in the strictly automobile district is taken or contracted for and still the dealers and accessory men increase.

The difficulty is aggravated by the desire of everybody to get ground-floor space, to get the most benefit from their retail business.

One of two things seems likely to happen at once, however—either a vast improvement in the character of buildings on two streets on the edge of the district, or an expansion of the district into several blocks to the southward over comparatively vacant ground.

Bursting Wheel Kills Garageman

KANSAS CITY, MO., Jan. 22—E. E. Cartwright, proprietor of the Ozark Trail Garage, was killed recently when a piece of metal from the flywheel of a motor, in which he was placing a new carbureter, flew off and entered his right eye, fracturing his skull. He was racing the engine when the accident occurred.

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Accounting and Business Systems



Wants a Job Card

System Editor: I find that the garages doing a moderate to large business require a system of billing their charge sales and at the same time making a distribution to departments.

There is also required a form for the cost of sales (labor and material). If you have any forms or system for handling this particular branch of the accounting I should be glad to have you send me full information. I have used time cards and material requisitions, but have not been able to design a good job cost sheet for this particular business. —M. H. PERO, Maine Railways, Light & Power Co., Portland, Me.

In reference to your third paragraph, in which you ask for information in regard to billing charge sales and at the same time making distribution to departments, the writer would refer you to Form 1 of the Accounting System. We will assume that the garage or repairshop which you have in mind uses a system of sales tickets which are numbered, and which provide for the name of the party to whom you are selling, and a description of the work or that material at cost that you have sold.

Let us assume that you are first selling a part or an accessory without any labor. The amount of the charge would be noted on the sales ticket, and it would be entered on Form 1 on the Debit side under Accounts Receivable, or Customers' charges, and if it was a sale of an accessory it would be entered on the credit side under Income, Parts and Accessories Department. This will take care of the distribution of your charge sales.

Charging Up Labor

If, by chance, there was labor included in this charge, that portion covered by the labor would be entered on the Credit side under Income Accounts to the Repair Department. Now on this sales ticket there should be provided space in which could be entered the cost price of the accessory sold, and when the amount of the sale is entered on the sales ticket the cost price of the article is obtained from the box in which the accessory is contained or even marked in some way on the accessory or part; this is entered on the sales ticket by using a code figure so as to keep the information from the customer.

The bookkeeper in entering the sale on his books will at the same time note on the duplicate which he holds the cost price of the article. At the end of the month the total cost of accessories sold is found by adding up the cost price on all of the sales tickets. In order to lessen the volume of work at the end of the month, the cost price of accessories and parts sold can be computed once a week, if possible. The total cost of parts and accessories sold is then entered under the Expense column of Parts and Accessories, and the same amount is entered on the Credit side under All Other Accounts and is credited to your Inventory or stock of Parts and Accessories on Hand.

The Envelope Time Sheet

The best and most efficient time-sheet that we know of is made in the form of an envelope, generally of a tough manila paper stuff which has a hole in the end, through which a string is run in order to tie this tag to that particular job to which it applies.

On the face of this envelope is printed a form which gives the number of the job, the name of the customer, when the job is ordered and complete instructions to the repair department as to what repairs are to be made. It also provides columns for the time of repairmen spent on the job, all outside purchases of material and inside purchases of material for this particular job. There is a loose sheet which is an exact copy of this form, which is held in the office, and the information on the front of the envelope is a carbon copy of what was written on this office sheet.

When the job is completed the envelope with all duplicate outside requisitions and stock requisitions from inside and any other memorandums from the repairman are enclosed in the envelope. On the outside of the envelope appears all the information needed to bill this job. After time has been computed, materials purchased on the outside have been checked with bills received and cost of materials used from your own stockroom estimated, a certain percentage is then added to the total and this is billed to the customer, entered on Form 1 under Customers' Charges on the Debit side, and that portion of the bill covered by labor is entered on the Credit side of the Repair Department and all materials used from your own stockroom are considered Income on the Credit side to the Parts and Accessories Department. When outside invoices for materials used in repair jobs are paid by way of Form 2, these invoices are charged to the Repair Department on the Debit side of Form 2 to an account which is called Cost of Materials Used. Your labor cost gets into the repair department itself by way of your weekly wages to the repairshop.

We might add that when this repair job was billed to your customer on Form 1 the number of the job was inserted in a column for that purpose, and by checking back in this column you are able to tell at all times how many jobs are filled in the shop that have not been billed by noting those job numbers which have not been entered into your system.

Wants Another Binder

Editor Motor World:

The posting of items from the Income and Expense Accounts in the front half of your ledger to the Customers' Accounts is an exceedingly awkward and tiresome proposition. Can you furnish separate binder for the Income and Expense Account sheets, and at what cost? —Burton Heights Garage, Grand Rapids, Mich.

In reply to your letter relative to the purchase of separate binders for the Income and Expense Account sheets, would say that we do not have these in stock, but you will be able to purchase them at a reasonable price from Tallman, Robbins & Co., 314 West Superior Street, Chicago, Ill.

System Editor: I want to thank you for your kind letter of Dec. 15 relative to your Simplified System of Accounting. The information contained therein has been very helpful and has enabled me to start your system correctly. Shall certainly take advantage of your kind offer to call upon your office when again in need.—KATHERINE G. McARDLE, 41 White Place, Brookline, Mass.

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Charles S. Henshaw

Boston

The twentieth in a series showing

Dealers Who Have Made Good

CHARLES S. HENSHAW, who sells the Dodge Brothers cars in Boston, was born in Boston 40 years ago. He left school at the age of 12, and ever since he has been climbing the ladder successfully. To-day he is a good example of a self-made man. First he was in the insurance business, but left that 25 years ago to enter the bicycle and tire trade, and he was one of the first to exploit the De Dion products, motorcycles and tricycles, in this country.

In 1900 he tackled racing, winning the world's 10-mile championship at the Pan-American Exposition. When he entered meets from time to time promoters found it hard to get other competitors, so Henshaw sold his machines and went to work for the E. R. Thomas Co. His success with that company was evidence of his ability. New Yorkers may recall how he took over the New York branch and put it into prominence after he had taken the Boston branch out of the slough of despond and made it a winner. A tentative offer was made to him to go into the manufacturing end at that time.

Alvan T. Fuller added him to his Packard sales force in Boston in 1912. And Fuller was glad of the move, for when the Packard factory offered bags of gold to the 200 salesmen who sold the most cars Henshaw won first prize.

In 1914 he resigned to form the C. S. Henshaw company. And to-day his company is credited with having secured the largest volume of retail business among all Dodge Brothers dealers in the United States, and first among all New England dealers. From nothing he has increased his force to 200, and his hobby is to build the largest organization in the world.

The Why:

First of all Henshaw is on the job all the time. Cardinal Richelieu is quoted as having said, "In the lexicon of youth there is no such word as fail." Henshaw is an example of its truth. Once he evolves an idea he starts to carry it out. He was told by an official that it was impossible to get a permit for a parade of Dodge cars through the busy narrow streets of Boston. He got the permit and held the parade. He was told that he could not get a permit to hold a moving picture show in his salesrooms one holiday, as similar requests had been turned down. Henshaw got the permit and went through with it. He did other things, too, by keeping everlastingly at it.

He is an originator, not a copyist. When he began business with Dodge Brothers car he decided that there would be no trades. And there never has been any. Nor has anyone ever been abl to buy a Dodge Brothers car at less than the list price.

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Sell Yourself to Your Men

An Editorial by Charles L. Turner, who operates the Turner Garage in Peoria, Ill. He has been actively engaged in Better Business for a long time and diligently practises its principles in his own business.

ONE of the ideas that has always appealed to me, because I used to have to work for someone else, has been the co-operation between employer and employees. We think that it is one of the best things for business at any time.

In our own shop we are trying to pay the men every cent they are worth and *we are trying to induce them to become worth more all the time.* The new Better Mechanics department in MOTOR WORLD hits the spot exactly. We are insisting that our employees read every number.

We have, heretofore, tried to plan to have a meeting every two weeks in the office and talk over matters and things pertaining to repair work with the employees. We want them to take more interest in the business and to be thoroughly awake and on the job.

So many times a good mechanic will perform the work that is laid out for him to do by the owner, and as he works on the job he will discover that some more things could be done that would be quite helpful, or possibly the owner needs a new tire or a number of other things that the mechanic will notice, and we are going to try to insist that the mechanics become something of salesmen while they are doing their work.

We think that nearly all of the help that we have are working for something better than their daily wages and we want to help them along all we can to realize what they are working for.

We really believe that meetings held at least once every two weeks would be quite helpful to the garageman as well as his employees. We are going try and carry this out and then we can tell you more about it. The greatest trouble that we have found so far is to find the time to have the meetings.

WE DO NOT FIND IN HANDLING OUR HELP AND TRYING TO TREAT THEM AS MEN THAT THEY TRY TO TAKE ANY ADVANTAGE OF US WHATEVER. IN FACT, WE BELIEVE THAT THEY ARE FOR US.

We do not permit any signs to be hung up in the shop that are not in favor of the employees. When I used to work as an employee there were all kinds of signs hung over the walls in regard to what the employees must do or must not do, and it seems to me that they had just the wrong effect with the mechanics and other help. In our own shop we have some cards up which are in favor of our employees; notices to the public in regard to work during the noon hour and work after hours and things of that sort, and we have also arranged to cut out Sunday repair work. This has been a big help to us and our employees.

We do not see that our work has lessened a bit; in fact, it seems to us that it has gained. We are inclosing a copy of the letter which we sent out to all of our customers in regard to this Sunday closing. We were just a little bit afraid to send it out on account of someone being offended, but a number of our customers told us personally that they had never thought much about the matter, but they were very glad to co-operate with us in regard to the Sunday work.

We are somewhat surprised that places where they have not had to keep open on Sunday, such as several places in California, are now thinking of doing that.

In conclusion we will say that we think one of the best ways for winter business or summer business either will be to get the good-will of your employees and try to hold it, and we are satisfied with the steps we have taken in that respect.

Turner's Letter to His Customers

We certainly appreciate the amount of business and good will that you have given us in the past, and we want to assure you that we want to, at all times, give you the best that we have, both in service and the quality of goods that we sell.

We are but human, and there is an end to human strength and endurance. Our help is complaining that the Sunday work is getting too heavy. Won't YOU kindly arrange to have YOUR adjusting and greasing done during the week. Our men will do it lots better and cheaper. We have found that as a rule Sunday work is very unsatisfactory. It is hurried too much to get the job out. In order to maintain the highest efficiency in our mechanics and to cooperate with the other large garages on Sunday work, we are going to try to allow our mechanics and workmen a FULL Sunday OFF, commencing with NEXT Sunday.

Sufficient help will be on hand to care for the gasoline and oil sales, tire troubles, our customers who store with us, and to man the tow car. But outside of that NO LABOR WILL BE PERFORMED.

Please bear this in mind and let us do your work during the week. We assure you that you will be the gainer.

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What is a Job?

Editor Motor World: Won't somebody please tie a great big 5-gal. gasoline can to the word "job" as applied to everything connected with the automobile trade? I have just returned from 2 or 3 days at the Milwaukee automobile show and I have heard the word applied to everything from a spark plug to a limousine.

In one particular instance, in an exhibitor's booth, where the exhibitor was showing some ladies a beautiful coupe, instead of calling it by its right name he reiterated the word "job" so frequently that one of the ladies finally asked him just what part of the car a "job" was.

If our friend Ray Sherman had been at the Milwaukee show I imagine he would have sized it up something like this:

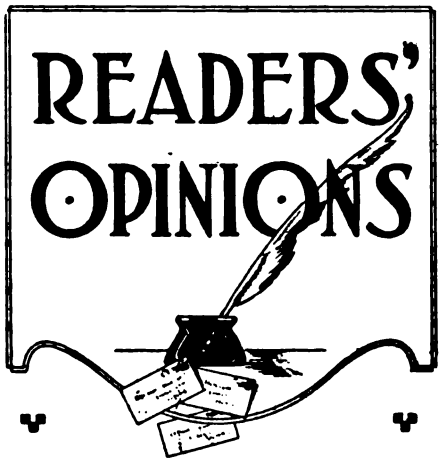
Milwaukee has one of the best exhibition halls in the country, an ideal space for setting a show. As one looks down into the Auditorium he is reminded of a bird's-eye view of the parking space inside the racetrack at the Beaver Dam County Fair.

There is no effort made to separate exhibits from each other, and the dealers seem to have tried to see how many cars they could bring over and crowd into their spaces. If the show committee had only taken down the decorations of green stuff and lattice-work which have been used so lavishly overhead and made partitions between the various exhibitors' booths it would have made all the difference in the world.

To cap the climax, the signs in the exhibitors' booths are painted in Roman gold on a light gray background, a color combination which it is almost impossible to read unless one gets directly in front of the sign, and the sign is fortunately located with respect to a light.

And you should see the exhibitors. Speaking generally, one could always recognize the exhibitors by the fact that they were either sitting down or leaning on something and yawning, regardless of the crowds trying to get a look at the cars.

I stood around two or three booths, for possibly 10 or 15 min. each, investigating a good chassis or a specially finished car, and not in a single instance did a dealer offer any information or offer to start a conversation. I asked some questions, which were answered civilly enough, but no effort was made to secure my name and address. Possibly I didn't look like ready money and possibly the salesmen were tired; but if that's the way they treat their customers who come in, the time is going to come before very long when these dealers will have good reason to believe that a show is an unprofitable institution.



It was very gratifying to note the contrast between the attitude of the car dealers and the accessory dealers. At Milwaukee the accessory dealers all have booths and take great pains to make beautiful displays, and those fellows certainly are on the job when it comes to glad-handing their dealers and explaining the new accessories. Possibly due to a very elaborate style show which is being put on by one of Milwaukee's leading ladies' furnishing houses, the crowds during the first 2 days of the show broke all records; but I couldn't help wondering whether a good deal of this crowd wasn't waste circulation. A ten-round bout between Jack Johnson and President Wilson would probably have attracted a crowd, too, but I am not so sure that *population* is all that is required at an auto show.—The Captious Critic.

Watch for This Man

Editor Motor World: Enclosed you will please find copy of a letter we received from the gentleman whose name is attached, and as we feel that this is more or less of a serious matter and should be immediately brought to the attention of your readers, we are submitting it to you for publication.

The Kent Motors Corp. have no representative of any kind traveling in any part of the United States or foreign countries. There is no one authorized, outside of the writer, to make any sales or agency arrangements of any kind, and therefore the faker who is traveling around as mentioned, using this company's name to secure money personally, is criminally liable, and we are notifying our friends in that territory to arrest him if possible. We think, however, that this should be published immediately for the benefit of your readers.—Kent Motors Corp., R. J. Laciar, General Sales Manager.

New York.

Kent Motors Co., U. S. Rubber Bldg., 1790 Broadway.

I am writing you for a little information. About 6 weeks ago a man called on me representing himself as your authorized agent. His business was to appoint territorial agent to whom a car was to be sent on consignment. All that was necessary was to advance $5 to go to a bonding company and if they accepted the car would be forwarded at once to be placed in a showroom and sold, the same being replaced as fast as sold; and extra $5 to be paid to the bonding company upon its acceptance.

He, of course, allotted territory to me in a written form and gave a receipt for the $5. He was a good talker and as it was dark I did not notice until he was leaving that he had an old balky horse and buggy to drum up trade or I probably would not have bitten.

I do not mind the little affair, but wouldn't mind knowing for a certainty whether he is your representative or a faker.—J. H. Gilbert, Plumsteadville, Pa.

Form Letters for Dealers

Editor Motor World—We note in the issue of December 20th of your valuable publication that one of your subscribers, John Walters, makes inquiry regarding where he can be supplied with advertisement and letters suitable to his trade. In your editorial reply you state that you do not know of any company that makes a specialty of doing this work outside of the advertising agencies.

We take pleasure in informing you that the department presided over by the writer is especially organized to undertake this class of service.

We are sending you under separate cover one of our latest catalogues. This contains insert concerning the writer, and for your information we might say that our charges to garages for advertising and letter service are extremely reasonable. On account of the fact that we are the only corporation in existence specializing in service to dealers, we are able to make the charges to the individual dealer very reasonable due to the fact that our volume of business enables us to keep down our overhead—Yours very truly, Wallace C. Hood, Service Bureau, Detroit, Frank M. Eldredge, Director—Advertising and Publicity.

That Randall Rider

Editor Motor World: I wish to express my appreciation in doing all I can to stop the Randall rider on the "Post-office Appropriation Bill," as it would work hardships on some dealers. I am a new one in the business and have found a great many articles of interest to our line of business. I would not do without the Motor World for double the price. Wishing you success in the future.—Banner Lubricating Oil Co., J. P. Rush, Jr., president, Cincinnati.

Have You Read
The Reilly Story

See Pages 12 and 13

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The RETAIL NEWS.

MOUNTAIN

The Mountain Motors Co., Denver, a new $50,000 corporation, has secured the Packard distributing agency for all of Colorado except six counties in the Colorado Springs and Pueblo district and for part of Wyoming and has opened a salesroom at 25 East Colfax Avenue.

Harry G. Moock, Denver, Wood's dual-power car distributer in Colorado and Wyoming, has added the Mercer for the same territory.

The Ouray Motor Sales Co., Ouray, Col., a new concern, has secured the Dodge agency for Ouray county.

The MacFarland Auto Co., Denver, for several years Packard and Buick distributer in Colorado and part of Wyoming, has sold the Packard business and is handling the Buick exclusively in the same territory with headquarters at 25 East Colfax Avenue.

The R. E. Williams Motor Car Co., Denver Abbott-Detroit distributer in Colorado and part of Wyoming, has added the Peerless retail agency for Denver and vicinity.

The Lexington Colorado Auto Co., Denver, a new $15,000 corporation, has opened a Lexington distributing agency for Colorado, Wyoming and New Mexico at 721 Seventeenth Street.

Edwin H. Bull, Denver, well-known racing driver in the Rocky Mountain region, and recently salesman for the National Motor Co. here, is now connected with the Mountain Motors Co., new Packard distributer, which he helped to organize as a directing stockholder.

COAST

A. F. Norton, Seattle, has assumed management of the Hughson & Merton branch. Norton has been connected with the Portland branch for the past three years.

The Bringham Motor Car Co., Seattle, distributer of the Cadillac, suffered a bad fire during the past week, but only a momentary halt was made in business.

William P. Sheehan, Tacoma, one of the best known railroad men in the Northwest, has resigned as contracting freight agent for the Union Pacific and has purchased a half interest in the St. Helen's Auto Sales Co., handling the Moon, Cadillac and Scripps-Booth.

The Duplex Shock Absorber Co., Spokane, has been incorporated by Clark Robinson, Herman Person and L. L. Westfall at $20,000.

L. G. Richards, Tacoma, has acquired the agency for the Grant, which will be sold in the garage of the Tacoma Gas & Electric Co.

The Standard Automobile Works, Tacoma, have taken the agency for the Ameston truck.

The Arensberg Automobile Supply Co., Seattle, has opened new quarters in the Broderick Building, at 906 East Pike Street. An energetic campaign to increase retail accessory business will be inaugurated.

Skinner & Elliott, Sacramento, Cal., are erecting a new building.

The Ryus Motor Co., Los Angeles, Chevrolet distributer, has established a branch house at 129 West Colorado Street, Pasadena, and is to open a branch at Long Beach.

W. G. Gilman, Oakland, Cal., has purchased the Auditorium Garage, on East Twelfth Street.

The Earl P. Cooper Co., Los Angeles, Pacific Coast distributer for the Wisconsin Motor Mfg. Co., has moved from Pico Street and Grand Avenue to a new 50 x 145 building at 1310 South Los Angeles Street.

The D. W. De Vaux Motor Co., Fresno, Cal., is erecting a new building of pressed brick and concrete.

EAST

The Nash Road Garage, Nash Road and Bowditch Street, New Bedford, Mass., is doubling the size of its garage and is building an accessory store. John A. Valentine is the proprietor.

The Ammon R. Smith Auto Co., York, Pa., Chevrolet and Marion-Handley dealer, with headquarters at 12 North Penn Street and at Dallastown, has purchased the stock and fixtures of the Carlisle Avenue Garage, Ray Greist, proprietor. Smith will move into his new garage Feb. 1. Extensive improvements will be made, including a large showroom and 100-car storeroom. The repair department will be managed by Ray Greist, the former owner.

The Pennsylvania Rubber Co. has opened a branch at 925-927 Main Street, Buffalo, under the management of A. R. Wendell, formerly connected with the Pittsburgh branch.

SOUTH

The Tennessee Auto Sales Co., 251 Monroe Avenue, Memphis, Tenn., has taken the agency for the Troy trailers in Tennessee and northern Mississippi.

The Southern Garage Co., Birmingham, Ala., has the agency for the Franklin and Service trucks. Charles Denegre is owner of the company.

The D. W. Young Motor Car Co., Birmingham, Ala., has been incorporated at $65,000 capital, fully paid up. The company will handle the Packard, D. W. Young is president, E. M. King vice-president and Ivan R. Derbyshire secretary. Salesrooms have been opened at 2308-10-12-14 First Avenue. The company has the state for the Packard.

Charles Hawley, Birmingham, Ala., one of the older automobile salesmen of the city, has joined the Flint Motor Car Co.

The Southern Motor Co., Memphis, Tenn., has opened salesrooms for the Dort at 614 Monroe Avenue.

Eugene Polk, Little Rock, Ark., has taken over the agency for the Chalmers in Memphis and will occupy the salesrooms formerly held by the Valley Motor Car Co. Polk was Chalmers' distributer in Little Rock under the name of the Polk-Foster Motors Co. Rufus Polk, a brother, is associated with him, and M. S. Pogue will be in charge of the wholesale department and G. E. Brown, a factory man, in charge of service.

The Kaehler Accessories Co., Richmond, Va., a subsidiary of the Kaehler Motor Co., has moved into larger quarters at 209 West Broad Street.

The Model Garage Co., Richmond Va., is having the building vacated by the Virginia Auto Supply Co., at West Broad and Belvidere Streets, remodeled as a salesroom and service station for the Haynes. Robert Crittenden and Robert Leeson are owners of the corporation.

NORTHWEST

W. B. Roberts, Des Moines, is in charge of a branch office just opened at 911 Walnut Street by the H. W. Johns-Mansville Co. of New York.

A. L. Randall, Lanesboro, Iowa, will locate his garage in a new building which is being erected for him by J. R. Davis.

John Leitzen, Mapleton, Iowa, has sold his garage to Bernie Clubine.

W P. Watson, Grinnell, Iowa, has sold the Brownell Garage to F. H. Briden of Waterloo.

The Riley Brothers Garage, Williams, Iowa, has been bought by Parkhurst & Lavendar of Webster City.

The Iowa Tire Co., Des Moines, has filed articles of incorporation with $15,000 capitalization. Officers are: President, R. A. Morton, Mason City; vice-president, S. C. Williams, Ames; secretary and treasurer, Ralph Law, Des Moines.

The Smith-Form-A-Truck Co., Des Moines, has changed its name to the Consigny Motor Truck Co.

Edward Ostrander, West Union, Iowa, has bought the J. R. Booth Garage and will open a Ford service station.

The Mackie Motors Co., Des Moines, is building a new home at 1421-23 Locust Street at a cost of $75,000.

C. K. Ross and Fred Boosert, Tipton, Iowa, are building a new garage at Fourth and Cedar Streets.

The Overland Sales & Service Co., Forest City, Iowa, is a new concern of which F. E. Hussong is president.

The Grennell-Hully Auto Co., Griswold, Iowa, has taken over the Griswold Machine & Auto Co.

W. B. Forrest, Shenandoah, Iowa, has bought the interest of George Hill in the Dodge agency there.

Charles Boyle, West Union, Iowa, is opening a new garage in the Lawyer Building. He will handle the Oakland.

The William Pelton Garage, Clinton, Iowa, has been bought by McEleney Bros., owners of the Lincoln Motor Supply Co.

R. J. Geisinger, Storm Lake, Iowa, has secured the Dodge agency.

Elmer Dugan, College Springs, Iowa, has bought an interest in the J. E. Gibson Garage.

Charles W. Keniston & Son, Hawarden, Iowa, is successor to the tire business of Charles W. Keniston.

The Van Sant Garage, Glenwood, Iowa, has been bought by Michael Fox.

Lathen & Piper, Malvern, Iowa, is a new concern which will handle the Studebaker.

The Lloyd Motor Co., Des Moines, a new concern, will be located in a new building on West Grand Avenue above Eighteenth Street.

W. H. Dudley, Churdan, Iowa, is remodeling and improving his garage.

The Walter Motor Car Co., Gladbrook, Iowa, is building a new garage.

The Motor Co., Omaha, Neb., M. W. Cavanaugh, Jr., manager, has taken salesrooms on Automobile Row, and will handle the Elgin Six.

The Auto Trimming & Repairing Co., Omaha, Neb., has leased extensive quarters at 410 South Eighteenth Street, where it will manufacture one-man tops and seat covers, and repair upholstery and do trimming.

F. P. Barnum, Omaha, Neb., late of the Johnson-Danforth Co., has taken over the Denby line of motor trucks and opened in temporary quarters at 2012 Farnam Street. The Johnson-Danforth Co. recently changed hands.

The Universal Motor Co., Omaha, Neb., opened its new home at 2562 Leavenworth Street on New Year's Day.

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The Apperson Motor Co., Omaha, Neb., has moved into its new location in the building vacated by the Cadillac Co. of Omaha, and will handle the Grant with the Apperson.

The Bertschy Garage, Omaha, Neb., has filed amendments to its articles of incorporation, changing its name to the Bertschy Mfg. & Engineering Co. The new capitalization is $125,000.

The C. W. Francis Auto Co., Omaha, Neb., will erect a complete wholesale service station at 2214 Harney Street. The firm occupied but 2600 ft. of floor space when it opened two years ago, and the new quarters will comprise 23,000 ft.

The Omaha Tire Repair Co., Omaha, Neb., will double its present quarters, building onto the present structure.

J. M. and V. E. Bell, York, Neb., have bought the Nelson & Samuelson Garage and taken possession.

The Crown Tire & Rubber Co., Omaha, Neb., has been incorporated for $250,000 for the manufacture of tires and other rubber goods. The incorporators are Henry A. Reichenbach, Omaha; Henry C. Meier, Council Bluffs, Iowa, and Jesse P. Howe, Des Moines, Iowa.

Ray Nye's Garage, Fremont, Neb., was destroyed by fire.

The Downtown Garage, Mead, Neb., has been sold to Verner Erickson.

Dale Leeper, Auburn, Neb., has bought the interest of William Howell in the Auburn Rubber & Tire Co.

J. H. Davis, Beaver City, Neb., has sold his garage to F. N. Van Meter.

R. C. Deulen, of Deulen & Dennis, Bridgeport, Neb., has bought out his partner in their garage business, which he will conduct alone.

Stanley Barnett, David City, Neb., will open a garage in a building which he has just rented.

Aloys Brockman, Lawrence, Neb., has bought out his partner, Herman Schroer, in the Lawrence Garage.

The Syracuse Auto Co., Syracuse, Neb., has bought the automobile business of James H. Eaton.

E. C. Piersol, Carroll, Iowa, has traded his garage for the farm of Frank Vollmer, Moville, Iowa.

Joseph Henkin, Madison, S. D., has sold the business and stock of the Madison Auto & Supply Co. to T. R. Smith.

Edward Gentelman, Albion, Neb., has sold his repairshop to a firm from Newman Grove, Neb.

Roy Leffler, Neligh, Neb., will open a garage at 1440 P Street, Hevelock, Neb.

The Eustis Mercantile Co., Eustis, Neb., has opened a new garage.

John Wehner, Fremont, Neb., has sold his interest in the automobile business to his partner, Rudy Marek.

The Wabonsie Garage, Clarinda, Iowa, has been dissolved.

R. Johnson, Huntley, Neb., has bought the Huntley garage.

Lane & Austin, Walthill, Neb., is a newly organized automobile firm.

Dewolf & Kohn, Gordon, Neb., have opened a garage and repairshop.

The Dassett Motor Co., Hastings, Neb., is a new automobile firm headed by Robert Dassett.

Arthur White, Washington, Neb., has bought the William Kahler Garage.

Peter Powers, Bellwood, Neb., has sold his garage business to H. Hall.

Lenhard & Lenhard, DeWitt, Neb., have bought the Messmore Garage.

E. J. Pratt, Syracuse, Neb., has opened a new garage and repairshop.

Oliver Buzzard, Red Cloud, Neb., has bought an interest in the Red Cloud Garage.

F. C. Griese, Shickley, Neb., has bought the Carlson & Gibson Garage.

Lummis & Edwards, Casper, Wyo., have organized the Casper Motor Co. and bought out the Nooman Brothers garage and machine shop.

The Hordville Garage, Aurora, Neb., has been completed and opened for business.

Whelan & Morse, Bladen, Neb., have bought the Frank Kudrna Garage.

H. J. Patton and W. H. Lane, Byron, Neb., have bought the Byron Garage and taken possession.

C. E. Bryant, Wessington, S. D., has sold his garage business.

John Jobman, Adams, Neb., has opened a garage at Diller, Neb.

Teeters & Homan, Grand Island, Neb., have leased a garage on Third Street and established a distributing point for Dodge cars.

John Fisher, Kilgore, Neb., has traded his garage and blacksmith shop for a large ranch near the city.

The Lincoln Way Garage, Ames, Iowa, has been bought by John Zumwalt and R. H. Shammey, Mason City, Iowa, and is being remodeled.

J. E. Harer, Ames, Iowa, has sold his interest in the Ames Taxicab Co.

The Eckerman Garage, Early, Iowa, was completely destroyed by fire.

Olson Bros., Grand Mound, Iowa, have nearly completed a new garage.

W. B. Swaney, Carroll, Iowa, has bought the interest of E. B. Cutler in the Hutchinson Auto Co., Jefferson, Iowa.

T. M. and W. A. George, Wiota, Iowa, have bought the Engle Garage Co.

George Smith, Winner, S. D., has sold his interest in the Winner Garage to William Horton and Carl Harvey.

Ernest and Arthur Dyer, Gretna, Neb., have bought the garage business of S. F. Breckenridge.

The Brown & Lucas Garage, Silver Creek, Neb., was destroyed by fire.

Roy Welch, Stratton, Neb., has leased a site and will soon open a garage and repairshop.

Fred Kubik, Schuyler, Neb., has bought the Russell Garage.

E. J. Murren, Clarinda, Iowa, has moved to Newmarket, Iowa, where he will open a garage.

The Auto Salvage & Exchange Co., Des Moines, Iowa, has been incorporated at $50,000 by O. B. Van Hoessen and F. W. Newton.

A. D. Bakke, Essex, Iowa, has sold his garage business to Merrill Spry, Clarinda, Iowa.

Lewis Trimpy, Culbertson, Neb., has bought the interest of H. H. Carr in the Main Street Garage, Bartley, Neb.

H. J. Corey & Son, Beaver Crossing, Neb., have bought and taken possession of the F. H. Roland Garage.

Ford Wolff, Crawford, Neb., has opened a garage.

The Auto Tire & Repair Co., Gering, Neb., has been organized by A. C. Randall and H. O. Brook.

Summerman Bros., McCook, Neb., have opened a new garage.

J. B. Romigh, Gothenburg, Neb., has sold his interest in the Gothenburg Garage and bought the Lincoln Highway Garage, North Platte, Neb., from E. M. Smith.

J. C. Sievers, Primrose, Neb., has bought the interest of his partner in the Sievers & Dobson Garage.

G. W. Hinton, Stockville, Neb., has bought out his partner, Amon Cole, and will operate the garage business alone.

Johnson, Lundell & Johnson, Boone, Iowa, have opened a new garage.

Henry Lusk, Logan, Iowa, has sold his interest in the Logan Tire & Repairshop to John Snyder.

Harlan Lynch, Castana, Iowa, has bought the Turin Garage, Mapleton, Iowa, from Marcus Amick.

George Wells, Red Cloud, Neb., has bought the garage department of Brubaker Bros.

W. D. Newbold, Gothenburg, Neb., has secured the Farmers' Store Building, which he is converting into a garage.

Ivan Eastman, Clarinda, Iowa, has sold his garage to Dale Prow and S. P. Leffler.

Charles Fields and Frank Hinman, Wynore, Neb., have opened a garage.

Frank Spiker and W. E. McMullen, Henderson, Iowa, have rented a site and will open a garage and repairshop soon.

The A. W. Heinrich Garage, Newhall, Iowa, has been opened for business.

J. R. Stickler, Shenandoah, Iowa, has opened a new garage.

C. C. Payton, Broadwater, Neb., has opened a new garage in the former Mercure blacksmith shop.

Chris Lund, Jacksonville, Iowa, has retired from the garage business.

W. C. Graham, Blue Hill, Neb., has opened a garage.

William Downing, Mullen, Neb., has opened a new garage in the former Mercure blacksmith shop.

W. J. Mohr, Culbertson, Neb., has bought the interest of William Ehlers in the Central Garage.

Anton Janek, Jr., David City, Neb., has bought the garage and stock of Frank East, Brainard, Neb.

Robert Cathcart, Danbury, Neb., has bought the Welch Garage and implement store of George Welch, Sr., and will move to the city in the spring.

George W. Cole, Storm Lake, Iowa, has bought the White Front Garage.

Louis Scott, Mt. Vernon, S. D., has bought the International Harvester Building on North Main Street and will open a garage.

A. F. Meyer, Sheridan, Wyo., has leased a building and opened a new garage.

The Majors Auto Co., Beatrice, Neb., is a new firm which has opened a garage.

Snyder Brothers, Lovell, Wyo., have bought the garage business of R. C. Young.

Castle W. Schaffer, Alvo, Neb., has bought the North Side Garage.

The Bethany Garage Co., Bethany, Neb., has been incorporated at $10,000. Incorporators are J. S. Tewksbury and E. H. Rice.

Heagney Bros., Friend, Neb., have traded their garage to the Nelson Real Estate Co., Minneapolis, Minn., for Dakota land.

I. J. Trueblood, Gordon, Neb., has opened a new garage.

C. C. Underwood, Doniphan, Neb., has bought the Doniphan garage.

Kasparek & Flory, Albion, Neb., have opened a new garage.

Fred Lane, Independence, Iowa, now is sole owner of the former Smith & Lane Garage on Third Avenue West.

The Glenwood Auto Co., Glenwood, Iowa, has been bought by William Chamberlain.

W. H. Mobley, Yale, Iowa, is opening a new garage in the Tasler Building.

The Kenyon Auto Co., Packwood, Iowa, is successor to Kenyon & Avery.

C. C. Yohe, Morning Sun, Iowa, has bought the interest of John Jamison in the Burlington Way Garage.

MIDDLEWEST

Paul Exley, Hancock, Mich., will build a garage early in the spring.

The Electric Vehicle Service Co., Saginaw, Mich., recently taken over by J. P. Beck and his associates and reorganized by the election of Beck as president, Theodore Beck as secretary and treasurer and E. L. Eastman as assistant manager, has taken the agency for the Rauch & Lang.

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The Acme Garage & Supply Co., Hancock, Mich., expects to move into its new quarters on Hancock Street soon.

The High-Seventh Garage, Columbus, Ohio, has been appointed distributer of the Denby truck in central Ohio.

The L. C. Auto Co., Jackson, Mich., has been incorporated to handle the Jackson, Wolverine, Peerless and Federal truck and has purchased the property at 218 West Pearl Street. The building will be remodeled and converted into a service station, showroom and accessory store and will be ready for occupancy April 1. In the meantime temporary headquarters will be opened at 108 Francis Street.

Josh Braun, Sebewaing, Mich., will open a Dodge salesroom in Elkton early in the spring.

The W. L. Wasson Co.'s Garage, Pekin Street, Lincoln, Ill., is being enlarged to take care of more storage, previous facilities being inadequate.

J. E. Ferguson and Oliver Naffziger, Dwight, Ill., who have been operating a garage in that city for five years, have dissolved partnership. Ferguson will handle the Ford exclusively hereafter and will seek a new location. Naffziger will remain at the old stand and will handle the Chevrolet and Buick and operate the repair, storage and supply departments, making some expansions and changes.

The Central Automobile Co., Rockford, Ill., has been incorporated at $2,500 by H. H. Towne, I. M. Towne and F. A. Rickner to sell cars and supplies.

H. S. Coddington, Abingdon, Ill., has moved into a new garage on North Main Street, one of the largest in central Illinois. The structure is fireproof and two stories.

The Ingram Motor Co., formerly located at Rutland, Ill., has rented quarters at 334-340 Knoxville Avenue, Peoria, Ill., and will hereafter distribute the Jeffery from the latter city. The company has sixteen counties in Illinois. Harry B. Russ will be sales manager and C. F. Graber will be in charge of the service department.

W. C. Starr, Decatur, Ill., has let the contract for extensive remodeling of his garage on North Main Street. The changes will give 2200 sq. ft. for a salesroom.

J. G. Starr & Son, Decatur, Ill., have taken a ten-year lease on the H. Post Building on East Main Street. This structure is three stories in height and will give a floor space of 15,000 sq. ft. It will be remodeled to suit the needs of the firm. About 2000 ft. will be devoted to a salesroom.

H. A. Brogan and A. L. Patterson, Huntsville, Mo., have purchased the Huntsville Garage of Dameron & Linn.

SOUTHWEST

The Superior Motor Car Co., St. Louis, has succeeded the Stearns-Knight Auto Co., distributer of the Inter-State car, merely a change of name.

The Aetna Spring & Ring Co., St. Louis, has been incorporated at $12,000. A salesroom will be maintained at 3442 Lindell Avenue to sell springs and parts. J. F. Jenkins and S. E. Ellman are the owners.

The Triangle Improvement Co., St. Louis, has been incorporated and will construct a garage and service building at Leonard Avenue and Locust Street. The lot has a 122-ft. front and a two-story, mission front building is designed. Dr. J. W. Shaw is president of the company and E. L. Kirtley, secretary.

The Southern Auto & Electric Co., Little Rock, Ark., and the T. H. Sharp, Jr., Co. have exchanged salesrooms in the double building at Capital Avenue and Spring Street. The exchange was made because of additional space available. The first named handles the Liberty and Westcott, the second the Oldsmobile.

The Kardell Motor Car Co., St. Louis, Reo distributers, has contracted to handle the Kelly-Springfield trucks. E. L. Clifford and T. L. Strong have been added to the sales force.

The Apperson Motor Sales Co., Little Rock, Ark., has been incorporated to distribute the Apperson in Arkansas, eastern Oklahoma and northern Louisiana. Branches will be opened in Fort Smith and Rogers, Ark. T. S. McNiel of Rogers, Ark., is president of the company. Wesley Smith will be manager of the Little Rock branch, at Tenth and Main Streets.

The Motor Car Supply Co., Little Rock, Ark., has leased the building at 917-919 Main Street for an accessory store and service station.

The Velie Motor Co., Leavenworth, Kan., has taken additional quarters, giving three times the former space.

The Universal Motor Co., Omaha, Neb., had its formal opening Jan. 10. W. H. Dudley, V. D. Benedict and O. D. Davidson are proprietors.

The R. B. Pugh Hardware Co., Morris, Okla., has purchased the garage of Bert Simmons.

Shelton W. Tyer and Frank Pruitt, Ardmore, Okla., will erect a garage.

Joseph Johnston, Bosworth, Mo., has traded his 160-acre farm for the garage and moving picture house of Dr. Gord Brown.

The Patterson Motor Co., Canton, Mo., successor to the Wallace & Patterson Motor Co. has incorporated at $5,000.

The Perryville Automobile Co., Perryville, Mo., recently lost its building and stock by fire.

August Ahring, Wellington, Mo., recently bought the Wellington Garage from Chas. Ernst.

The O. H. Bond Motor Co., Parsons, Kan., has secured a five-year lease on the building formerly occupied as a livery barn, for their automobile business and will move from their present location March 1.

Frank Olde, Wilson, Kan., has sold the Golden Belt Garage to Everett O'Neal and William Lutz, the new owners taking possession Jan. 1.

The Ikenberry & Stanley Garage, Quinter, Kan., is completed. It is 50 x 120 and cost $6,000.

J. A. Chandler, Kansas City, Mo., has leased the charging station formerly occupied by the Kansas City Light & Power Co. and will use it as a garage.

The Mason Tire Co. Kent, Ohio, has leased quarters for a Kansas City (Mo.) branch office at 1732 Grand Avenue.

T. I. Williams, Moberly, Mo., has sold his garage to N. E. Hinton & Sons.

The Macon Motor Car Co., Macon, Mo., has been incorporated for $2,000 by S. J. Joyce, H. B. Clarkson, Waldo F. Smith, C. J. Kentz, C. B. Truitt and John W. Thompson. Automobiles and supplies will be sold.

G. H. Rabins, Mayview, Mo., has installed a motor car department in his hardware, harness and implement business.

Watson & Braxdale, Nevada, Mo., are successors to Watson & Bunker, owners of an accessory house.

The Stearnwear Tire & Tube Co., St. Louis, has been incorporated at $2,000 by J. C. Steinlage and F. Boerger.

The Garford Motor Truck Co., Kansas City, has incorporated for $20,000 and leased a building at 1708-10 Main Street.

H. E. Brett, for the past four years a traveling salesman for the Splitdorf branch at Kansas City, has been appointed assistant manager.

J. A. Chandler, Kansas City, Mo., has leased the garage at 1226 Charlotte Street from the Kansas City Railways Co.

William Palmer, Lexington, Mo., will build a two-story garage at cost of $20,000.

C. & F. Brueggeman, Lexington, Mo., have purchased the garage of E. W. Mollenkamp.

The Kansas City Auto Parts Co., 1827 McGee Street, will open a branch at Sedalia, Mo. C. L. Houseman, a representative of the Kansas City house, will be manager.

The Gentle Garage, Louisiana, Mo., was recently completed. It is 21 x 70.

The International Motor Truck Co., Kansas City, Mo., representing the International Harvester Co. has opened salesrooms for western Missouri and eastern Kansas at 1710-12 McGee Street. M. L. Higgins is manager.

V. E. and T. A. Ferguson, Kansas City, Mo., have purchased the Trails Garage, 12th and Charlotte Streets, of W. P. Lyons.

The Elgin Motor Car Sales Co. of Missouri, Kansas City, Mo., has been incorporated for $10,000 by J. E. Crowford, J. F. A. Casey E. J. Tranin and H. M. Griffin.

J. H. Brotherton, Stockton, Mo., has purchased the garage of Brotherton & Jones.

The O. K. Garage, West Plains, Mo., has opened for business.

Arthur and Walter Frost, Mount Moriah, Mo., will erect a garage at Sand Springs, Okla.

The Overland-Moberly Motor Co., Moberly, Mo., has been incorporated for $10,000 by A. C. Leisner, L. W. Schuessler and Martha Leisner.

The Trachsel Motor Car Co., St. Joseph, Mo., has been incorporated at $16,000 by R. S. Trachsel, G. E. Meyers and J. S. Myers.

The D. C. L. Tire Service Co., Kansas City, has leased a building at 2610 McGee Road. It is one of fifteen branches in the United States. F. C. D. Dobson, one of the owners, will make his home in Kansas City and manage the branch.

The Vincil Auto Co., Independence, Kan., incorporated for $5,000. Incorporators are E. S. Vincil, Peake Vincil and Margaret B. Vincil.

The Williams Motor Car Co., Wichita, Kan., has opened a new garage. It is distributer of the Paige.

The Yeager Inter-State Motor Co., Wichita, Kan., has opened for business at 133 North Lawrence Avenue.

N. E. Myerly, Mankato, Kan., will remodel and enlarge his garage, making it 60 x 140. A stock of accessories, supplies and new machinery will be installed.

Cline & Dow, Moran, Kan., Ford dealer, will build a brick garage, 50 x 80.

Roy Goodwin, Toronto, Kan., has gone to Kansas City to take a course in an automobile school, preparatory to opening a garage in Toronto.

Judge Lang, Oberlin, Kan., has purchased a half interest in the Caster Garage. It handles the Allen, Metz and Chevrolet.

The Ray Garage, Toronto, Kan., is nearing completion. It is 40 x 80.

Charles Cruse, Abiline, Kan., will build a brick display room 47 x 120. He wil lalso carry accessories.

Charles Hutchens, Cassville, Mo., has moved his garage to the Davison Building. He and Glenn Tucker have formed a partnership.

The Public Garage, Butler, Mo., owned by Norfleet & Ream, is undergoing a complete overhauling and remodeling. The second floor, which has been used for years by Company B as an armory, will be converted into a machine shop.

The A. F. Graves Garage, King City, Mo., has been completed. It is a two-story brick structure.

Martin Garman, formerly with the public service commission at Jefferson City, Mo., has entered the motor truck business at Kansas City, 1419 Walnut Street. He will distribute the Ford-Dearborn truck.

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Three More Car Makers Increase Their Prices

Pierce-Arrow Adds $500 to $800; Selden Has New Prices and Simplex Advances

BUFFALO, Jan. 22—The Pierce-Arrow Motor Car Corp. has increased its prices for 1917. The touring and the 48-roadster models have been increased $500, the model 38-closed body $700, and the model 48-closed body $800. This change makes the present price list as follows: 38-models except brougham and landaulet $4,800, brougham and landaulet $5,900; 48-models roadster and five-passenger touring car $5,400, seven-passenger touring $5,500, limousine $6,800; 66-model two and four-passenger roadsters $6,400, seven-passenger touring $6,500, limousine $7,800.

Selden Truck Revises Prices

ROCHESTER, Jan. 22—The Selden Truck Sales Co. has revised prices on all its models as follows: Model G, 1500 lbs. capacity, $985; model JWL, 2-tons, $2,385; model TL, 1-ton, $1,850; model JC, 2-tons, $2,150; model TX, 1-ton, $1,385; model N, 3½-tons, $3,150. A 5-ton model is to be announced in the near future.

NEW YORK, Jan. 22—The Simplex Automobile Co. has increased the price of its chassis $1,000. The chassis now sells for $6,000.

Purchase of Badger Brass Completed

DETROIT, Jan. 22—The purchase of the Badger Brass Mfg. Co., Kenosha, Wis., by the C. M. Hall Lamp Co., Detroit, was completed on Jan. 20, the Badger plant being sold to the Hall company for approximately $400,000. The consolidation makes the Hall company the largest producer of its kind. Business for the next year for both plants, it is estimated, will total more than $2,000,000. G. A. Yule, president; R. H. Wells, treasurer, and C. G. Koch, vice-president, of the Badger company retired from that concern on Jan. 20, immediately following its sale.

Winton Does Not Infringe Lindsay

CINCINNATI, Jan. 22—The Winton Co., Cleveland, does not infringe the Lindsay axle plant. The United States Circuit Court of Appeals decided this last week, stating that there was lack of invention in the Lindsay patent, No. 748,760, on which the suit between the Winton company and the Lindsay Auto Parts Co. hinged.

250 Attend Annual Champion Gathering

TOLEDO, Jan. 22—The third annual get-together and banquet of the Champion Spark Plug Co. was held at the factory Jan. 20, the banquet being held at the Toledo Club that evening. More than 250 persons were present. Each year the Champion company runs a train of special cars to its plant, carrying engineers and other officials from the Detroit motor car factories.

To Assist Export Development

NEW YORK, Jan. 22—The American Motors Co. has been formed to assist car and accessory manufacturers in the development and handling of export business. The American company is prepared to handle purchasing, financing, packing, shipping and insuring of all products of the motor car industry which are exported. It is planned also to include farm tractors.

$9,500 CHASSIS WITH 150 HP. AVIATION ENGINE

(*Continued from page 9*)

efficiency is claimed because the air is forced through the radiator with greater friction than is possible with the vertical type. The steering gear is especially built.

Starting and lighting is by a 12-volt system, with the head lamps mounted on the radiator. The engine is illuminated by two special lights when the bonnet is raised. The 25-gal. gasoline tank is copper. The wheels are wire with plain clincher rims and fitted with 34 x 4½ cord tires. Two complete spare tires and wheels are provided.

One or two features about the bonnet are exclusive, particularly the ventilation, which is protected by patent applications. There are six triangular curved ventilators, which are designed to clean out the air beneath the hood. These projecting ventilators start with a line flush with the top of the hood, and tilt upward and backward for a length of 6 in. The rear opening may be closed at will with a waterproof door controlled by a hand lever on the dash, making the hood entirely waterproof. Another individual feature on the bonnet is the use of vault lock latches. The handles of these are ivory and the latches are always under spring tension to prevent rattle.

The instrument board is also patented, and is a single panel through which the recording hands of the different instruments extend and over which a single piece of plate glass is fitted. The windshield also is a special design, and is claimed to be entirely rainproof. The glasses lap over each other by 3 in. when they are entirely closed. At the back of the body there is a substantial luggage carrier made of bronze and brass, hand-finished and nickel-plated. All the tools are high-grade steel, and nickel-plated socket wrenches are provided to fit every bolt in the entire engine and chassis. The tools are mounted in flush receptacles, and when the tool-box lid is opened a table is formed with all the tools in their places and ready for use.

St. Louis Assembly Plant for Maxwell

ST. LOUIS, Jan. 23—The Maxwell Motor Sales Corp. has leased 30,000 sq. ft. of floor space in the plant of the St. Louis Car Co. and will use this for a temporary assembling plant for the Southwest. Twenty thousand five hundred square feet of testing yard space also has been obtained, and it is stated that the Maxwell company contemplates the erection of a branch factory here.

Truck Owners to Fight Proposed Legislation

New York Associations Will Fight Measure Which Would Multiply Fees Fourteen Times

NEW YORK, Jan. 22—Concerted action was taken to-day by motor-truck interests of New York State to protest against making into law the proposed schedule of taxes for motor trucks and buses. The new schedule would increase the fees from double to fourteen times the present charges.

It was decided to protest against the proposed fees on the ground that they are not based upon the time of use of roads or of the wear caused on such roads, but simply upon gross weight and seating capacity of buses, and urge that present fees be continued in force until such time as a new commission be appointed by the State to determine a scientific basis of taxation based on the road wear of all types of vehicles, including motor trucks, passenger cars and horse wagons. This motion was unanimously adopted by those present, who included representatives of the National Automobile Chamber of Commerce, the Motor Truck Club of America, the Motor Truck Club of New Jersey, the Automobile Dealers' Association, Inc., and other motor-truck associations. A committee of seven will be formed from the organizations represented to go to Albany to demand a public hearing on Senate Bill No. 73 and Assembly Bill No. 123.

MORE

Men You Will Meet At Chicago

(*This list supplements the one appearing in the January 17 issue of* MOTOR WORLD.)

Cole Motor Car Co.—Congress—*C. P. Henderson, general sales manager; *J. E. Roberts, district sales manager; H. R. Human, advertising manager; A. F. Knobloch, general manager.

Bound Brook Oil-less Bearing Co.—La Salle—George Smalley, W. F. Jennings, Harry J. Lindsley.

Corcoran Mfg. Co.—Sherman—*W. R. Hughes, E. B. Corcoran.

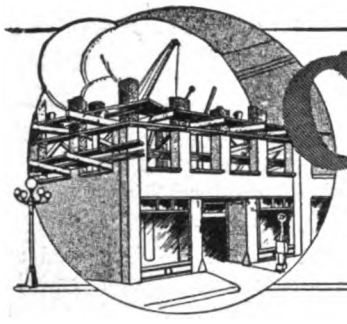
Goodrich-Lenhart Mfg. Co.—Sherman—Ivan Goodrich, William Edwards.

Philips-Brinton Co.—Sherman—Edwin S. Philips, J. Philips, A. Brinton, Ivan Goodrich.

Rubber Insulated Metals Corp.—Sherman—*Wm. F. Hart, George S. Atwater, Western representative.

Weaver Mfg. Co.—Ft. Dearborn—*Charles F. Hodgson, Thomas Ritchie, J. F. Chumbley.

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Scientific Construction

GARAGES REPAIRSHOPS SHOWROOMS

GARAGE AND SHOWROOM WITH PROVISION FOR EXPANSION

By Harold F. Blanchard

Editor Motor World: We desire to erect a two-story building 85 x 150. We want the showroom sufficiently large to properly display two models of the Briscoe car and two of the Apperson, the latter having just been taken on.

We would have at least three desks in our office with a small but comfortable looking accessory department.

It would also be our idea to have an attractive retiring and rest room for ladies with a desk, lounge, stationery, etc., for their comfort on the ground floor.

We also anticipate the installation of a shower bath for owners and chauffeurs upstairs—which would be absolutely free—and which we think would be a bit of personal attention which would be appreciated after a long drive.

It might be well to put in on the upper floor a dust-proof room of one car capacity for a varnishing and refinishing room, as it may be necessary for us to install something of this kind within the near future.

As explained to you in our former letter, we would think that the best location for the elevator would be opening direct upon the street side, as we believe it would be much more satisfactory in this position.

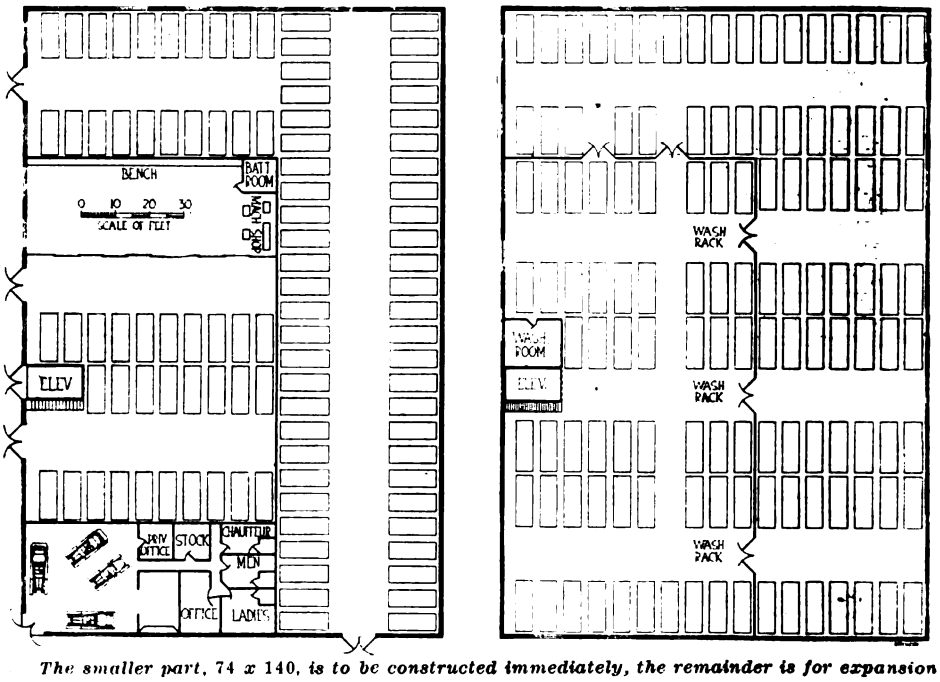
We would like your opinion as to the best location for the wash racks, whether upstairs or on the ground floor.—Florida Briscoe Distributing Co., St. Augustine, Fla.

In studying the plans which are attached, you will note that all the different rooms, except the varnish room, have been placed on the first floor front, as there is plenty of space here for them, and to put the men's shower bath upstairs, for example, simply means breaking up valuable space. Besides, it is more convenient the way we have arranged it.

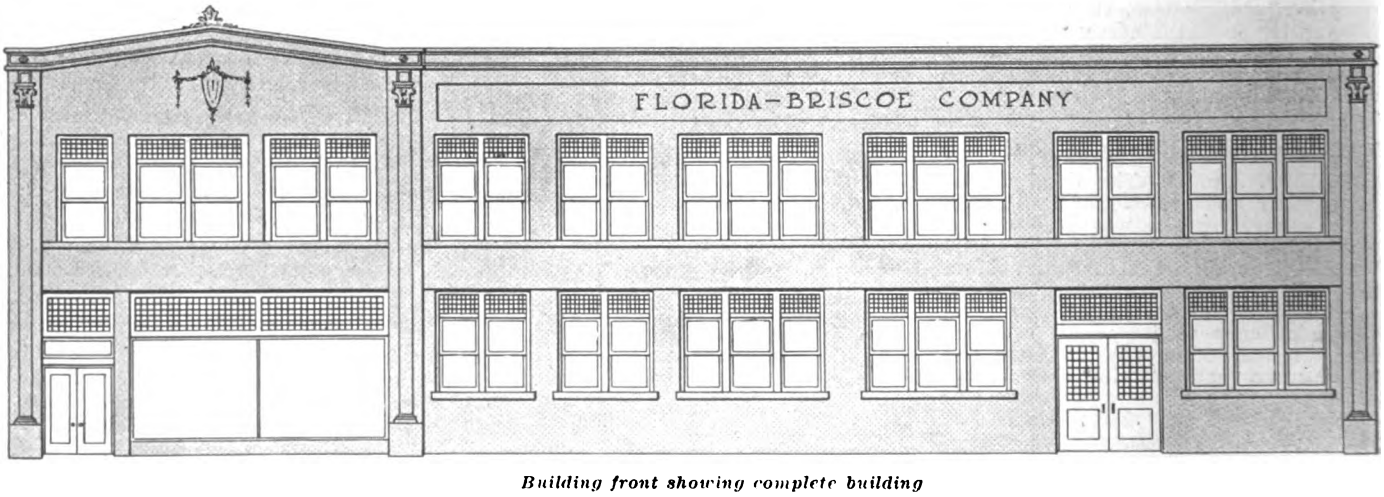
The building we have designed is only 74 x 140 instead of 85 x 150. We have also drawn plans for the building which is to be put up later on. If you make your building as big as you intended, you will spoil the additional space which you have at the side and the rear of your present garage. With the dimensions we have selected there is a strip about 48 ft. wide along the sides of the building. This width is sufficient so that you may have a central aisle of ample width with a row of cars on each side on the ground floor. It would be impossible to follow this arrangement, however, if you only had 38 ft. The same holds true of the strip across the rear of the building.

We believe that you will have a very fine building when you are through, and we shall be very glad to have you send us a complete set of photographs together with full details regarding the construction and equipment so that we may publish a description in Motor World.

There is only one word of caution we would like to offer, and that is that you do not make the mistake of slighting your showroom. We find that many dealers spend from $20,000 to $50,000 on a new building and will economize on their showroom so that when they are through they have a room that is little better than an open space in the garage.



The smaller part, 74 x 140, is to be constructed immediately, the remainder is for expansion

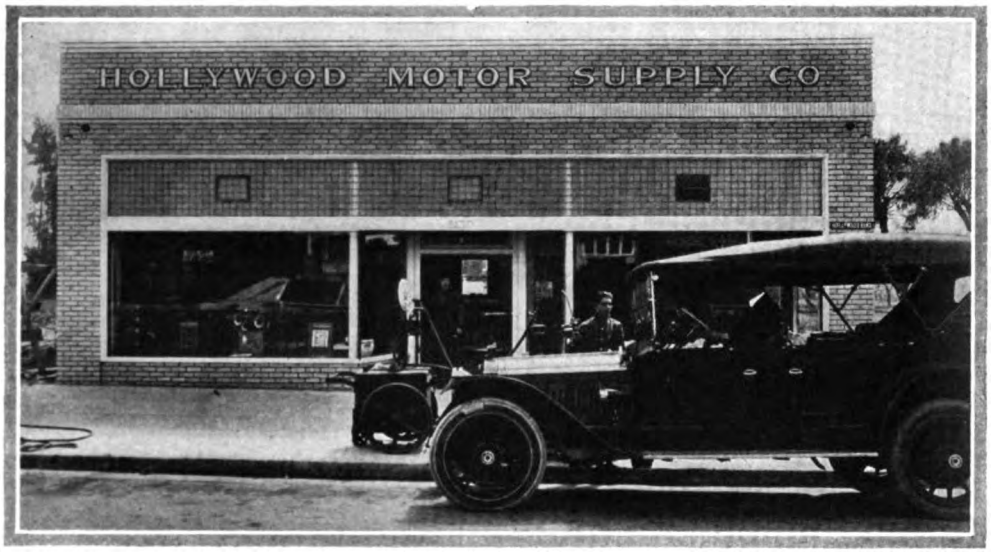


Building front showing complete building

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Fine Accessory Store in Los Angeles

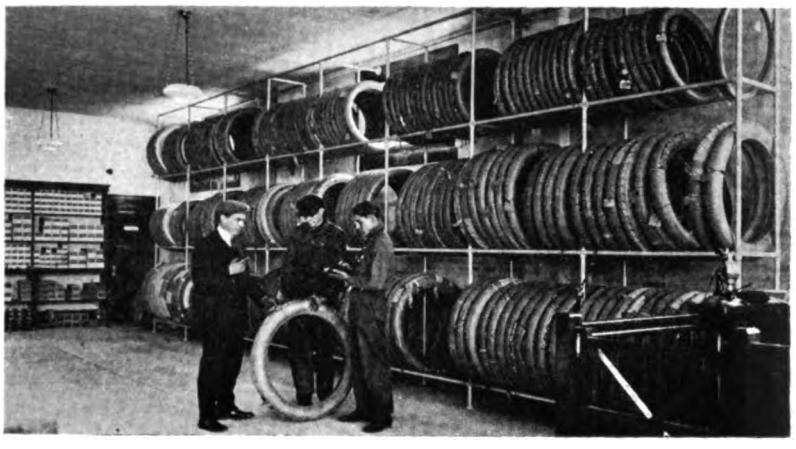
THE new store of the Hollywood Motor Supply Co., Los Angeles, makes a strong appeal to the customer's eyes. The building is exceptionally attractive both outside and inside, and particular care has been taken to make it as neat and clean as possible. Practically all goods are displayed—the customer can see the whole stock. Every article stands as a silent reminder of something he may want. The customer is usually sold on sight. He sees the full line attractively displayed in attractive surroundings and he is immediately prejudiced in favor of the goods he sees before him.



An attractive but simple front with two fine show windows



Caps and wraps neatly displayed



The tire rack is built of small white enameled piping



Jet black shelves and showcases contrast strongly with the white walls

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(No. 1021) DOUBLE AUXILIARY JACK

The auxiliary jack illustrated possesses stability, in addition to strength. It is heavy plank, bolted together with the uprights spaced to support the car through the running board braces. After raising the car the jack is readily pushed into place, holds the car securely yet affords ample room for the mechanic. —Frank Lindenthaler, Chevrolet Service Station, New York.

(No. 1022) CONNECTING ROD ALIGNMENT

Part of an old crankshaft, in conjunction with a faceplate and square, may be used in testing the alignment of connecting rod assemblies. The crankshaft is cut just forward of the rear connecting rod bearing, and the flywheel flange used as a base to bolt the dummy crank thus formed to the faceplate. To use, the assembly to be tested is attached to the bearing in the manner shown, and a metal square used to determine whether the top of the piston is parallel to the crankshaft bearing. It is evident that the dummy crank must be bolted to the faceplate absolutely true, or the accuracy of the test is destroyed.—Frank Lindenthaler, Chevrolet Service Station, New York.

(No. 1023) EXPANDING CYLINDER LAP

An old piston, larger than the cylinder to be lapped, may be made into an expanding cylinder lap in the manner illustrated. The piston is turned down until it is the exact diameter of the cylinder to be lapped, and the part below the wrist pin removed. A diagonal slot is then cut in the remaining part, making it in form an extremely wide piston ring. Two connecting rods, bolted together, as shown, form a handle, and the lap is kept in the expanded position by coiled springs placed between the connecting rod and the wrist pin bearing cheeks. Ground glass and oil are used as a lapping compound.—W. S. Porter, Chevrolet Service Station, New York.

(No. 1024) CLUTCH SPRING COMPRESSOR

This compressor was designed for use on the Chevrolet model H-4, but could readily be adapted to the requirements of many cars. It comprises a cast iron cross member, carrying a compression screw, and held to the clutch flange by two threaded rods, as shown. The feature of this puller is that it cannot slip from the flange, and that the point of the compressing screw is held in alignment with the clutch spring.—Frank Lindenthaler, Chevrolet Service Station, New York.

To The Chevrolet

(No. 1025) CAR HOISTING CRADLE

A hoisting cradle for the Chevrolet model 490. The rear ends of the side frame members are channel section, and open at the rear, the inner part of the channels offering a convenient purchase for the hoisting cradle. This cradle is merely an extension of the frame, made of angle iron bolted together, and inserted in the car frame channels as shown. The lifting force may then be applied either from a chain block or special quick acting jack, without the possibility of injuring the car body.—Frank Lindenthaler, Chevrolet Service Station, New York.

(No. 1026) FRONT AXLE GAGE

A rigid T-square, made of strip steel measuring 2 x 3/16 in., forms a convenient gage for testing front axle spindle alignment. The two parts are riveted together; the spring seats and a rod placed through the spindles forming the basis of the test. By placing rods in both spindles and sighting lengthwise of the axle, any twist may be detected.—Frank Lindenthaler, Chevrolet Service Station, New York.

(No. 1027) WHEEL ALIGNMENT GAGE

A gage for testing the alignment of the wheels may be readily made in the manner shown. It comprises a bent cross rod having a C-hook formed at one end, and a sliding pointer at the other. The C-hook is caught over the felloe on the front side of one of the wheels to be tested and the sliding pointer brought against the felloe of the opposite wheel and locked in position by the thumb screw. The rear sides of the wheels are then tested, and the amount the pointer was moved to bring it into the same relative position noted. A handy rule to go by is that the front of the front wheels should be from ¼ to ⅜ in. closer together than the rear felloe on the same wheels. The rear wheels should be parallel.—Frank Lindenthaler, Chevrolet Service Station, New York.

(No. 1028) REAR AXLE STAND

Rear axle assembly and adjustment is facilitated by the use of this stand. It is wood throughout, bolted together, as shown, and holds the axle in a vertical position, as this position has been found most efficient because the assembly and adjustment is done from a standing position. A feature is that the stand is adjustable. The brake support may be placed in anywhere along the base, and the drive shaft support may be caught at any height.—Frank Lindenthaler, Chevrolet Service Station, New York.

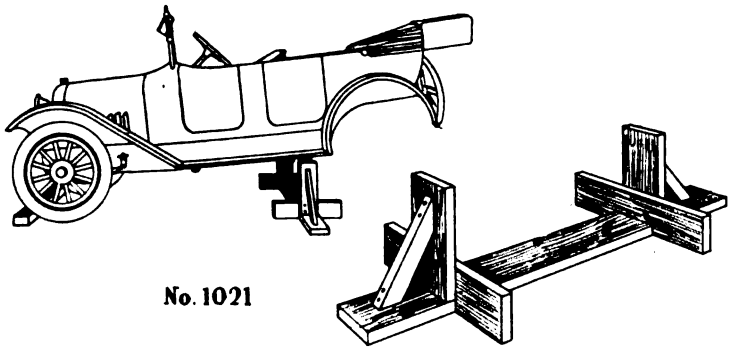
(No. 1029) STRAIGHTENING REAR AXLES

Bent rear axle drive shafts may be straightened without removing them from the frame by the aid of this rig. It comprises an H-section base, carrying two uprights, a cross piece for catching the end of the bent shaft, and a notched fulcrum plate that acts as a brace between the housing and the base. To use, the wheel of the bent axle is removed and the shaft turned until it is in the top position. The rig is then applied as shown, and the nuts on the threaded uprights tightened until the shaft is brought back to true.—Frank Lindenthaler, Chevrolet Service Station, New York.

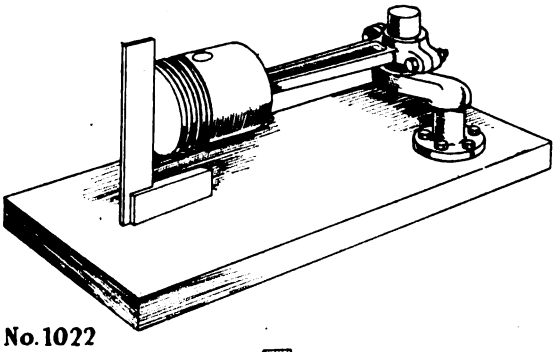
(No. 1030) AIR OPERATED GREASE GUN

This grease gun is operated by air pressure. It comprises a 3 in. pipe, closes at both ends by a pipe-cap, and carrying a leather cupped piston. The leather cups are held between metal disks, and the central bolt is threaded, and carries a guide disk in the air chamber. The grease end of the pump is fitted with a copper discharge tube; the air end with an inflation valve. For light non-fluid oils, the pump may be filled by pulling the plunger back with a tapped rod inserted through the rear of the air chamber; heavier greases, however, requiring that the grease chamber cap be removed and the grease packed in.—Frank Lindenthaler, Chevrolet Service Station, New York.

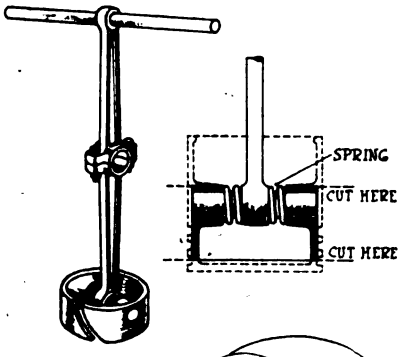
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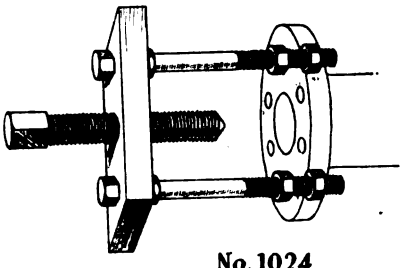
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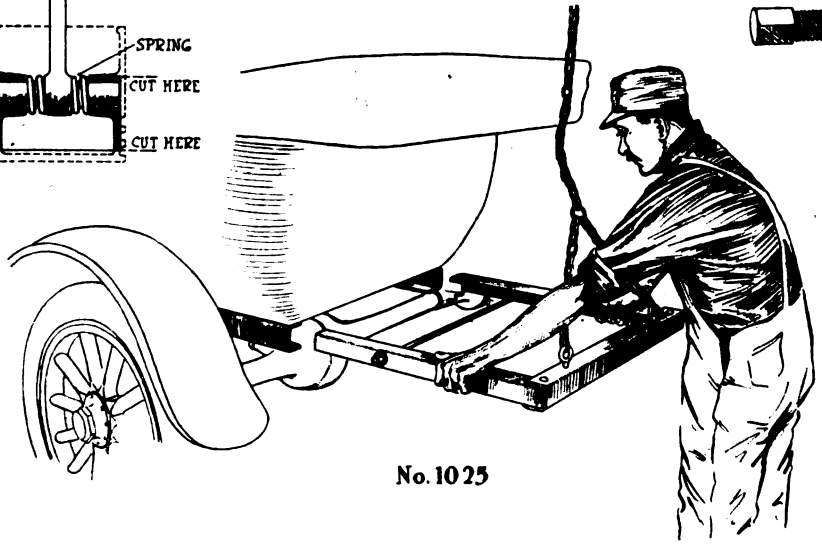
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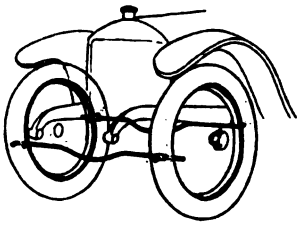
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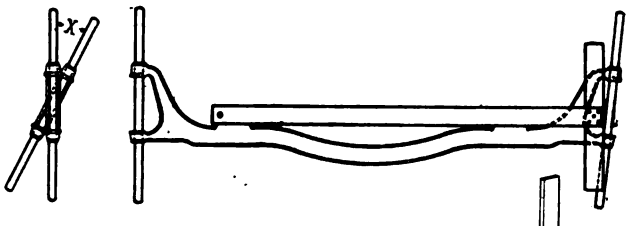
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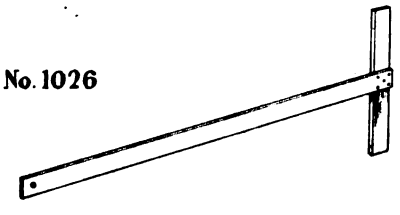
EXAGGERATED END VIEW SHOWING METHOD OF DETERMINING TWIST

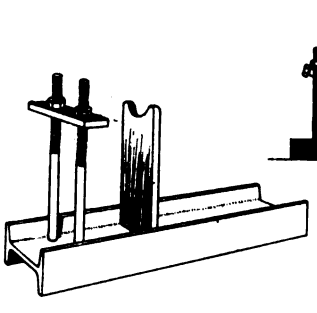


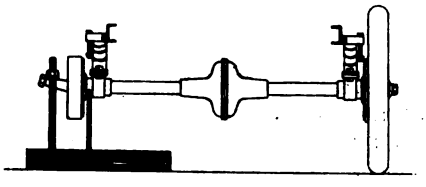
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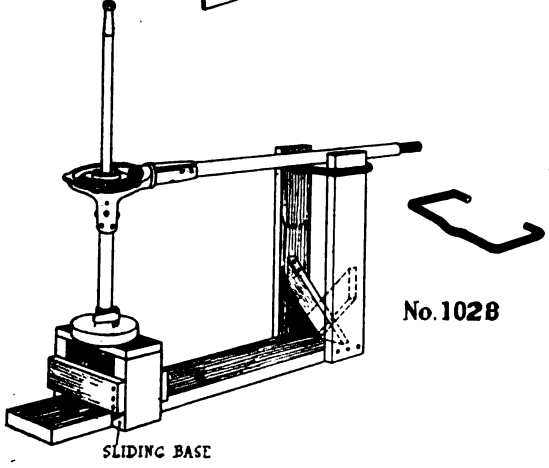
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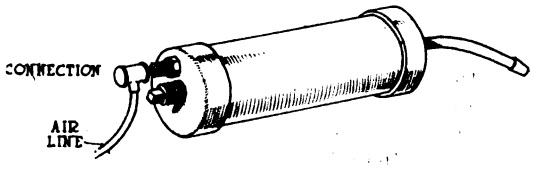


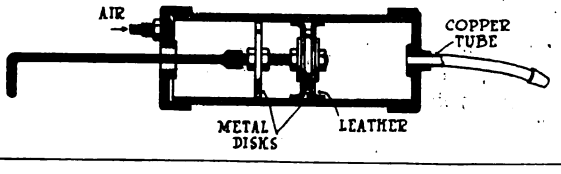


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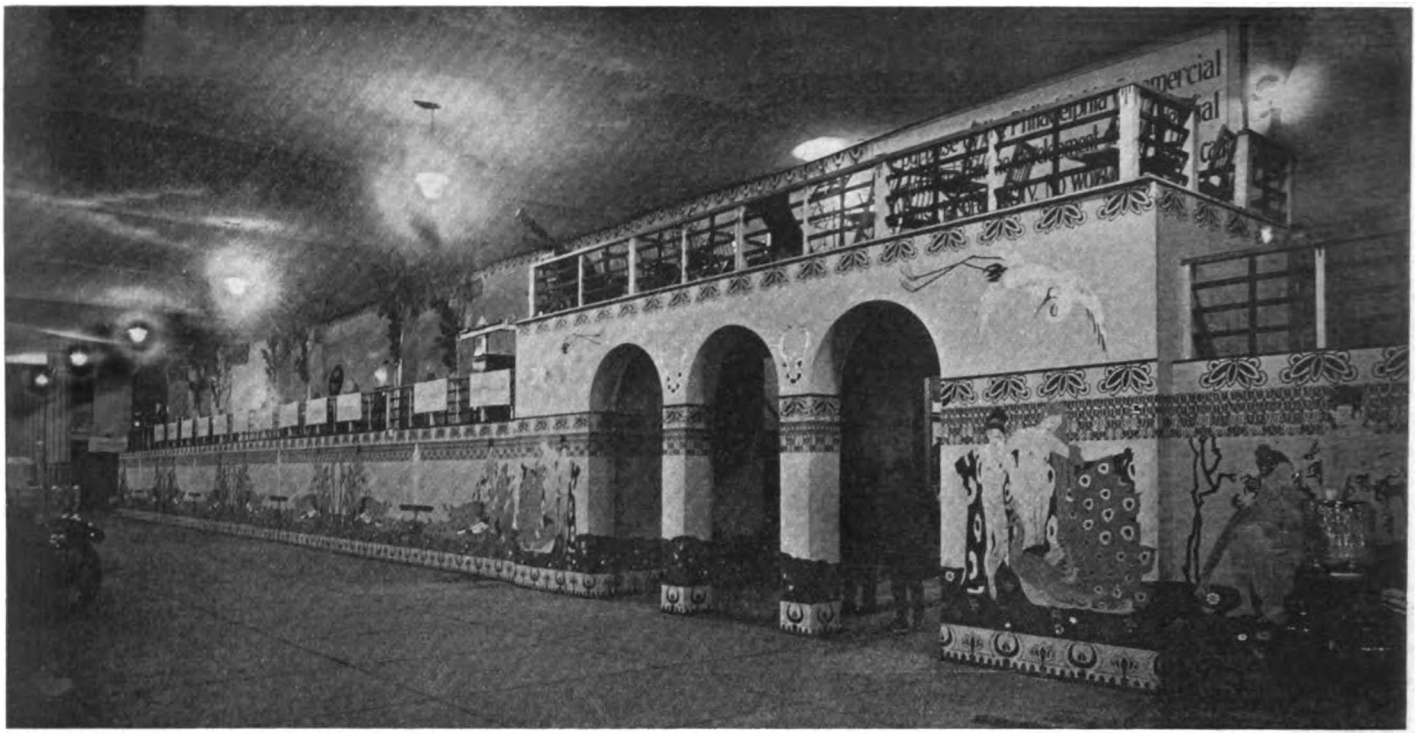
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No. 1030

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Philip S. Tyre, who designed and executed the decorations, went to the Orient for his theme. Take a look at the entrance, showing the accessory and orchestra balconies. This view was dubbed "Peacock Alley" by the dealers

Ready Money—Easy Sales
Philadelphia Expects a Banner Year

Her Dealers sold 41,600 cars last year and will sell better than 63,000 during 1917

PHILADELPHIA, Jan. 20—During the past year 41,600 cars were sold in the Philadelphia territory, an increase of almost 100 per cent over those sold in 1915. In Philadelphia alone there are approximately 35,000 cars and the population is about 1,750,000, giving one car to every 50 persons. For the next year a conservative estimate of the cars to be sold is 63,000, having a total value of $66,000,000 and an average price of $1,038.

Ready money is the reason. Pennsylvania with its enormous natural resources in oil, coal and minerals unequaled by any State in the Union; the first State in the manufacture of iron and steel, and the second in textile products, finds Philadelphia a focal point. Due to the war, Pennsylvania—and therefore Philadelphia—has felt a wave of prosperity that is even greater in proportion than that of the leading cities. The bank clearings of one day in the past week are an index to this. They are shown in the appended table.

Philadelphia intends to make this prosperity permanent. No other city is better prepared for a resumption of foreign trade after the war. During the first 11 months of the past year the export business totalled almost $300,000,000—more than double that of the previous year. Additional lines of steamships are being established for trade in foreign countries, and more than 100 vessels are under construction on the Delaware. All the wharves, piers and docks owned by the city are loaded, and the demand for such facilities is increasing.

A Great Railroad Center

But it is not alone from the State of Pennsylvania that the port of Philadelphia draws its trade, though that alone would make it a great port. Three railroad systems center here and connect with the Western States, and Philadelphia is preparing to handle this trade in the future.

This prosperity reflects directly on the motor car and makes the 100 per cent increase in sales of the past year sound, and a 50 per cent estimated increase for the next year plausible. Another element that will tend toward an increase in car sales with attendant prosperity to the dealer is that the State Highway Department intends to materially extend the State highways in the coming year. The following is what the State Highway Department will ask the reconvening Legislature:

1—The approximately $3,000,000 in annual revenues from the registration and licensing of motor vehicles to be used solely in maintaining the 10,200 miles of State highways.

2—Ten million dollars ($5,000,000 a year) for reconstruction of State highways in accordance with the provision of the Sproul act for connecting centers by beginning simultaneously at both ends.

3—An appropriation to permit aiding boroughs in building State highways.

4—An appropriation to allow the continued absorption of toll roads around Philadelphia.

This means good roads, and good roads mean more cars, both working hand in hand and both bringing prosperity to the dealer.

One example of the material growth in Philadelphia motor trade is that of the Gomery-Schwartz Motor Car Co., Hudson dealer. In January, 1916, this

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company moved into an eight-story building. Within three months sales had increased so rapidly that preparations were made for a new and larger home. This building will be one of the largest retail automobile sales buildings in the world. It will be ten stories high, have six acres of floor space; the salesroom will measure 137 x 100 ft., and will accommodate 25 cars at one time.

This same growth is noted throughout the trade in the Philadelphia territory, and the year 1917 bids fair to place it well in the fore of motor trade circles.

How Philadelphia Bank Clearings Have Increased

	1917	1916	1115
Philadelphia	$62,503,236	$38,287,154	$26,114,275
Boston	46,776,627	38,442,103	26,693,258
Chicago	83,049,524	67,126,923	54,568,426
St. Louis	21,541,055	17,124,279	14,924,573
Baltimore	8,675,174	6,944,510	6,566,250
New York	716,209,433	554,273,111	300,902,163

One Car To Every 260 sq. ft.

Which Made Most Exhibits Too Crowded

PHILADELPHIA, Jan. 20—The 16th annual automobile show held in the Commercial Museum by the Philadelphia Automobile Trade Association has broken all records. For the first time the show has been held in a building specially prepared for that purpose. It was opened on Friday night, Jan. 19, before the closing of the New York show, making distinctive the fact that the show is not a reflection of the New York show. In spite of the fact that the association spent more than $40,000 in staging the exhibit, there will still be a balance in the treasury and a rebate to the members.

The total attendance was close to 100,000, due to the prosperity of the district, the new exhibition building and the weather. With the exception of Thursday, the attendance averaged over 10,000, the dropping off on that day being because formerly Thursday has been society day, with $1 admission instead of 50 cents. This was discontinued this year, but the hangover was felt.

Commercial Museum is the largest single story building under one roof in Philadelphia, being approximately 300 x 300 ft., and having an actual display area of 75,000 sq. ft. Considering that the flooor space available year before last was 27,000 sq. ft., and last year 50,000 sq. ft., the marked increase in the show is indicated.

In spite of the fact that six weeks before the opening the entire show was in the air, the decoration scheme was carefully worked out and well executed. It was Oriental in effect, removed from the commonplace, and original. In style it may be termed Oriental, comprising stenciled mural decorations, large Oriental pillars and figured friezes, all multi-colored, yet in harmony with each other and the cars displayed.

There was a total of 117 exhibitors, of which 66 were car exhibitors and 51 accessory exhibitors. A census showed a total of 280 cars exhibited, of which 95 were touring cars, 85 closed cars, 57 roadsters, 30 chassis and 11 electrics.

From this it will be noted that 50 per cent of the exhibit included a chassis, and the chassis seemed to be the center of a crowd in nearly every case. This is partly due to the fact that the attendance is largely from the outlying districts, and the outlying districts seem to want to watch the wheels go round.

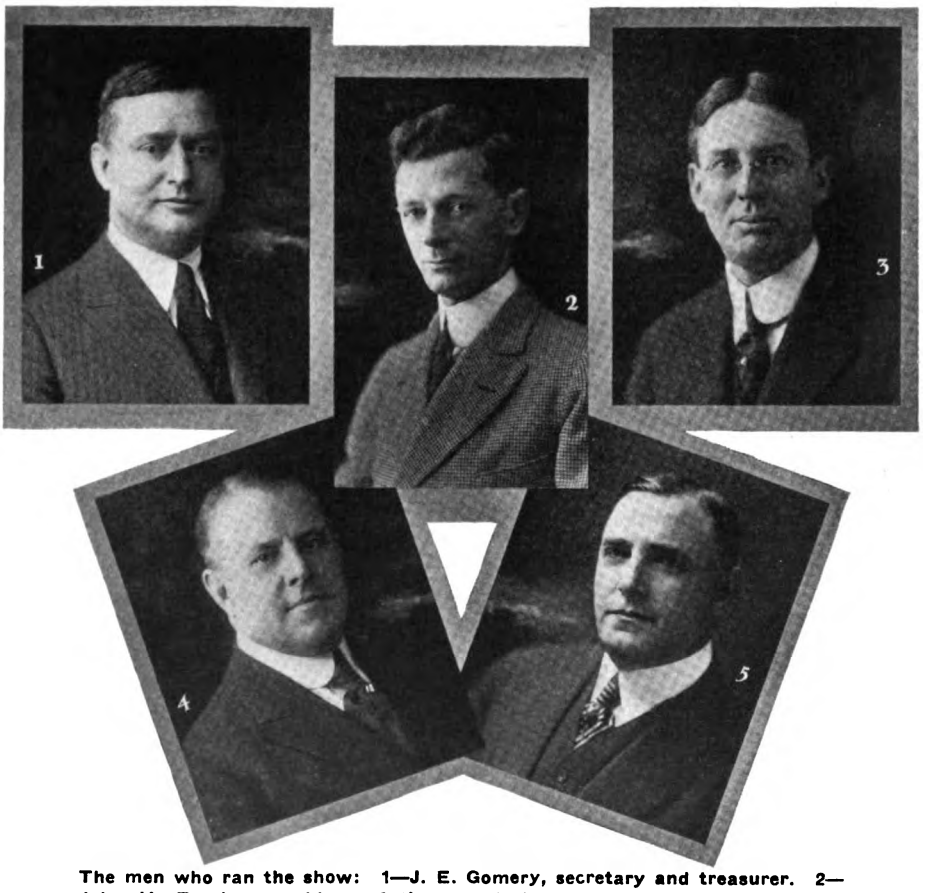
The crowds interested in the chassis were only interested in those that were cut away to show something, and had a competent man there to explain the points. For example, the crowds at the Paige sectioned chassis were always large. True, the idea was unique—but there was a man there who was explaining the selling points of the car. At the Buick chassis it was the same way and at many others. In many cases, however, the chassis was forgotten—no parts were moving—no one was explaining why or how; and it represented so much wasted space.

Unless the chassis shows something and there is a competent man there to constantly, continually and everlastingly point out that something is, the chassis might better be left in the alley and the space used for breathing purposes.

Sixty-six car exhibitors—280 cars and 75,000 ft. of floor space. That means about 4½ cars per exhibit, or one car to every 260 sq. ft.—a little over twice the space that is allowed in a garage. Right here is the one point that Philadelphia dealers did not observe—that a crowded exhibit is almost as bad as no exhibit at all.

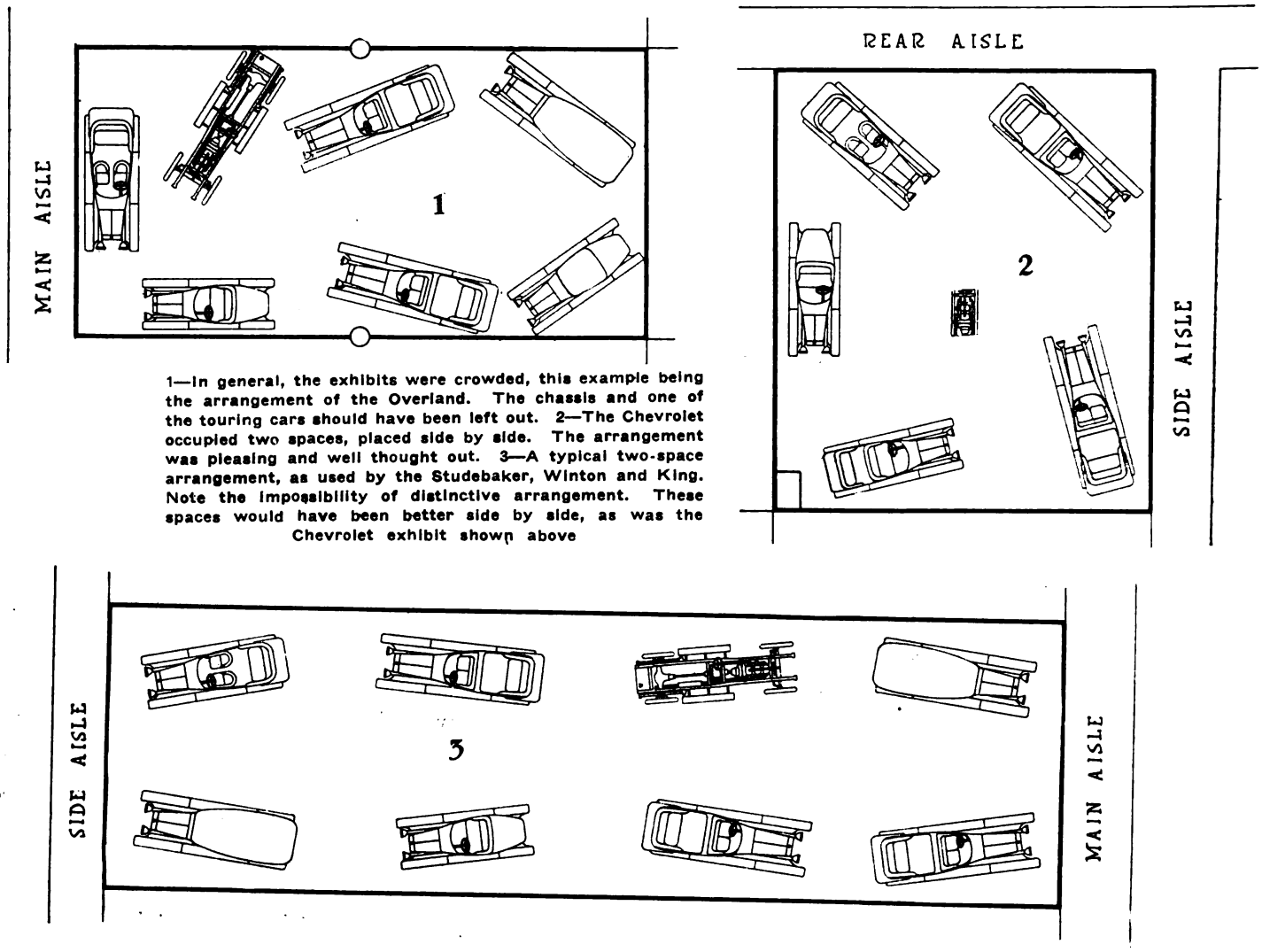
This was partly necessitated by the shape of the exhibit stands, being on the whole too long and narrow, and this effect was increased in running the exhibit through two aisles. For example, the Winton, the King and the Studebaker exhibits occupied double spaces, placed end on end, rather than side by side.

Effective display was difficult, pleasing



The men who ran the show: 1—J. E. Gomery, secretary and treasurer. 2—John H. Fassitt, president of the association and chairman of the show committee. 3—Albert E. Maltby, vice chairman. 4—L. J. Eastman, director. 5—Louis C. Block, director

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1—In general, the exhibits were crowded, this example being the arrangement of the Overland. The chassis and one of the touring cars should have been left out. 2—The Chevrolet occupied two spaces, placed side by side. The arrangement was pleasing and well thought out. 3—A typical two-space arrangement, as used by the Studebaker, Winton and King. Note the impossibility of distinctive arrangement. These spaces would have been better side by side, as was the Chevrolet exhibit shown above

arrangement impossible and a garage effect resulted. The Chevrolet was a pleasing contrast to this, as here the two spaces were side by side. This permitted the cars to be seen all at once, gave an open space in front and permitted a pleasing arrangement. Next year the exhibitors taking double spaces should, if possible, take them side by side.

Too many cars were displayed—the effect was one vast storeroom, with the cars in any way to get them in, every exhibit in the neighbor's backyard, and the possibility of telling where one exhibit left off and the other began difficult.

The answer is fewer cars to each exhibit—and those cars so arranged that they are distinctively set off, easily seen and reached by the observer. Division of some sort between the exhibit would help, but if fewer cars were displayed and each exhibit well thought out and arranged as a unit, the effectiveness of the show would be materially improved.

Lack of time, the large number of models to be shown and the prosperity of the district are no doubt reasons for the crowded display, but next year the show committee should balance the spaces allotted, limit the number of cars displayed and remove the one thing in which the Philadelphia show this year was lacking.

How The Show Was Run

FORTY thousand dollars spent before the show doors opened.

A special bill passed through both branches of the City Council.

The entire planning and execution of the work necessary for the exhibition of nearly 300 cars.

This is what the Philadelphia Automobile Trade Association has accomplished in staging the 16th Annual Show.

The association is one of the strongest in the country, and one of its purposes is to produce a bigger, better and more representative show for Philadelphia each January. It was founded 15 years ago by 14 dealers. To-day it comprises 62 dealers, owns its own rooms, and in addition to running the annual show, is a clearing house for the city motor trade.

Each year the problem of adequate show space had been vexatious. Philadelphia possessed no exhibition hall that would meet the requirements in every respect, the nearest approach being the old Commercial Museum at Thirty-fourth Street, below Spruce. This building had approximately 90,000 sq. ft. of space on one floor, but was unheated, unlighted and tied up by Federal, State and City appropriations. But the dealers got busy, brought every influence to bear, and less than six weeks before the show was staged passed a bill through both branches of the City Council leasing them the building for one month each year for four years, with a proviso, the proviso being that the council would change the city laws and permit the dealers to use the museum, charge for space and admission if the association would heat, light and decorate the building.

This has been done in six weeks. Over $20,000 were spent for heating and lighting, $9,000 for decorations and an additional sum, bringing the total up to nearly $40,000 spent for advertising, printing and all those things necessary to a successful show. It has meant work, plain, hard work, on the part of the show committee.

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Gasoline Prices Still Show an Upward Trend

South Shows Advances of 1 to 5 cents and Pennsylvania is up —West Also Feels Rise

NEW YORK, Jan. 19—Further increases in the price of gasoline are reported from different sections of the country this week, ranging from 1 to 5 cents. The rapid advance in crude oil has been responsible. Pennsylvania crude is now selling at $3.05 per barrel.

The Atlantic Refining Co. has raised prices 2 to 5 cents a gallon in Pennsylvania. In the future the three automobile grades will be as follows: 68-70; 26 cents; 70-73, 29 cents, and 73-76, 33 cents. The Texas Co. has made an advance of 1 cent a gallon in the South. The following are the new maximum and minimum prices: Maryland, 22-21 cents a gallon; Virginia, 23½-21½; North Carolina, 24-22; Georgia, 26-23½; Florida, 25½-23; Alabama, 27-23½, and Oklahoma, 23, tank-wagon basis. The Standard Oil Co. has advanced prices 1 cent, to 24 cents, in Boston. The price has been 23 cents since Aug. 11.

Gas Up a Cent in Milwaukee

MILWAUKEE, Jan. 20—The third increase in gasoline prices in the Milwaukee district since Jan. 1 was made on Wednesday, when ½ cent was added to the entire list. On Jan. 3 prices were raised 1 cent and on Jan. 9 the low-grade fuel was advanced 1 cent. The cheapest gasoline now sells for 21 cents per gallon at filling station and 20 cents tank-wagon basis.

Following are the States in which gasoline prices have been advanced 1 cent a gallon, together with the new maximum and minimum prices: Colorado, 26-23; Montana, 25½-24; New Mexico, 26-22, and Wyoming, 24-20½.

Centaur-Jeffery Dealers Convene

CHICAGO, Jan. 22 — The Centaur Motor Co., Jeffery distributer, held a mid-winter convention of its dealers Jan. 18. Sixty-seven dealers attended. Following a preliminary meeting, presided over by President A. M. Robbins, of the Centaur company, and Charles Mooney, general manager, the visiting dealers were taken to Kenosha in two special Pullmans. At the Nash factory the dealers were the guests of the Nash Motors Co. On the return to Chicago the dealers were given a theater party by the Centaur company. The convention will be a semi-annual affair.

Continental to Open Service Stations

DETROIT, Jan. 19—The Continental Motors Co. will open a number of national service stations throughout the United States. Contracts have been closed in both New York and California for the first of these stations. The identity of the parties concerned has not yet been made public.

Maxfer Adds Ton Model Electrically Equipped

It is Worm-Driven, has Bailey differential and Sells for $1,195— Chicago Plant Quadrupled

CHICAGO, Jan. 23—The Maxfer Truck & Tractor Co., which has been making truck-forming attachments for Ford cars, is bringing out a new 1-ton truck complete which will be styled the Dependable and will sell for $1,195. The truck is equipped with a four-cylinder, 3½ x 5 motor, is worm-driven and has a number of features, including electric lighting and starting equipment and a Bailey non-stall differential. The wheelbase is 130 in. and the loading space 4 to 6 ft. wide and 9 to 11 ft. long, according to the type of body. Rear tires are solid pressed-on type, 34 x 4. The equipment includes cab curtains and a windshield.

The new truck, together with the Maxfer company's "Whale for Work," the Ford converting unit, will be exhibited at a special display directly opposite the Coliseum at Chicago during the show; the address is 1512 South Wabash Avenue. During the year the company will produce 20,000 of its truck units and 2000 of the Dependable models. The Chicago plant is being quadrupled in size, and in addition there is a plant at Martinsburg, Va. In the Chicago plant alone more than 800 men are employed.

Annual Dinner of Members of The Class Journal Company



This is that part of the organization of the Class Journal Co., Publisher of Motor World, which gathered for the annual dinner held during the week of the New York show. Not all the men are shown. A. B. Swetland, general manager of Motor World, is directly in the center at the head of the table. This is the first Class Journal dinner at which President H. M. Swetland has not presided. Mr. Swetland was prevented from attending by illness.

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WHAT THE TRADE ASSOCIATIONS *ARE DOING*

Kansas Wants a Lien Law

TOPEKA, Jan. 19—Completion of the organization begun Dec. 12; formulation of plans to push the acts introduced by Senator Paul Kimball to modernize the old lien law in order to protect dealers and garagemen, and a discussion of better methods in the motor car business, were the main topics of discussion at a meeting of the Automobile Trade Association of Kansas, held at Topeka, Jan. 16.

This organization was formed Dec. 12. Since that time Secretary Kenyon Riddle, of Abilene, has been in various parts of the State promoting district bodies to co-operate with the parent association. He reported much enthusiasm among all garagemen.

The association as a unit will get behind the proposed measures to make it a misdemeanor to defraud dealers. The lien law, or something similar to cover their business, and the good roads issue, will receive its entire support during all sessions of the Kansas houses.

The present Kansas laws make it impossible for a dealer to seize a car or any part of it for debt. If the proposed legislation is passed dealers will be allowed a lien against a car for garage, repair or similar bills.

Moral support was asked of the association members for the proposed highway commission which is provided for in a measure being introduced by J. T. Kincaid. If the present legislature adjourns without creating this highway department, the State will lose $2,150,000, which is her share of the Federal appropriation for permanent roads.

Another meeting will be held in Kansas City during the week of the show there, Feb. 12 to 18.

Halbert Heads Chicago Garagemen

CHICAGO, Jan. 22 — Eighty-seven garagemen and accessory dealers attended the annual meeting and banquet of the Chicago Garage Owners' Association held at the Planters Hotel Jan. 17. H. E. Halbert, of the Garfield Park Automobile Garage, was elected president, other officers elected being: First vice-president, William Jones; second vice-president, H. G. Williams; third vice-president, Nate Jacobs; secretary, Harry Salvat; assistant secretary, C. R. Linden; treasurer, B. F. Daube; directors, Fred Daniels, Harry Salvat, Frederick Acker, Sidney S. Hermann, George A. Wallace, R. C. McPherson.

Robert Bland, president of the National Automobile Trade Association, reviewed the history of the association, and pointed out the advantages of organization; John A. Bloomington spoke on the legal side of the business; H. S. Gilbert, of the Gilbert Employment Agency, urged the necessity of garage employees educating themselves; William Gibson, Jr., of the Gibson Garage, urged closer co-operation in the matter of collections. President Halbert reported the association to be in excellent financial condition, assets being $2,229, and expressed the hope that every garageman in Cook County will become affiliated with the association.

Champaign County Dealers Organize

CHAMPAIGN, ILL., Jan. 19—The Automobile Trade Association of Champaign County, Illinois, was organized at a meeting of the dealers held in Champaign. Officers were elected as follows: President, H. O. Ammerman; first vice-president, representing supply men, Harry Herrick; second vice-president, representing repair department, E. W. Harriman; third vice-president, representing automobile sales department, C. B. Wiggins; secretary-treasurer, L. R. Lumley. It was voted to hold the annual automobile show at the Armory on March 1 to 3. W. R. Elkins was selected manager. At the meeting for perfecting the organization Jud R. Joslyn, one of the prime movers in the organization of the dealers' association at Rockford, Ill., was present and delivered an address upon a simplified system of keeping garage accounts.

Bloomington Dealers Limit Free Service

BLOOMINGTON, ILL., Jan. 19—The recently organized Bloomington Automobile Trade Association has launched a campaign for various reforms in the local field. In the past the dealers have been at loggerheads, and the lack of unanimity has been expensive to all. It is now planned to get together and increase profits and reduce expenses, placing the industry upon a remunerative basis.

It was voted at the last meeting to restrict free service on new cars to 90 days after the car has been delivered.

In addition to the time limit for service, the Bloomington association is working upon a proposition for handling used cars. While no definite action has been decided upon as yet, the solution which appeals to the majority leaves the appraisement of value to one or two experts not connected with any sales agency. They will place a price upon the car in accordance with age, mileage and general condition. After this valuation is fixed it must stand and no dealer will be permitted to allow a greater sum, regardless of the price of the new car to be taken in exchange. At the next meeting the used-car problem will be disposed of definitely.

Sweeney Heads Denver Dealers

DENVER, COL., Jan. 17—The annual election of the Automobile Trades Association of Colorado resulted in the choice of the following officers for 1 year: President, B. K. Sweeney, of the B. K. Sweeney Electrical Co., a wholesale accessory firm; first vice-president, Wells Littlefield, of the Texas Co.; second vice-president, O. P. Sells, of the Auto Service Co.; treasurer, R. E. Hay, of the Peters-Tucker-Hay Rubber Co.; auditor, Charles T. Bruckman, of the Pearl Garage Co. The directors elected for 2 years are: R. E. Hay, from the tire division; O. P. Sells, gas garage division; B. K. Sweeney, accessory division. Edgar W. Johnson was retained as paid secretary of the organization.

Dallas Dealers Elect Atwood

DALLAS, Jan. 19—At the annual meeting of the Dallas Automobile and Accessory Dealers' Association the following officers for the year 1917 were elected: President, John W. Atwood, Buick Automobile Co.; vice-presidents, W. G. Langley, Franklin; Dan F. Safford, Overland, and W. H. Noble, Texas Co.; secretary, R. C. Langley, Dallas Buick Co.; treasurer, R. L. Cameron, Cameron Automobile Co. Directors: S. G. Davis, Davis Motor Co.; Frank Smith, Oriental Oil Co.; E. E. Rhoades, Fisk Rubber Co., and A. G. Bair, Kissel dealer.

Columbus Discusses Salesmanship

COLUMBUS, OHIO, Jan. 19—A very interesting meeting of the Columbus Automobile Trade Association was held at the Virginia Hotel Jan. 15, when March C. Tyndall, president of the Columbus Salesmanship Club, made the principal address. He talked on "Salesmanship and Service," and showed the method of employing both in the sale of cars and accessories. He paid especial attention to salesmanship as applied to garagemen, showing how their sales of accessories and service can be increased by employing good salesmanship methods.

The special committees on the cost of making general repairs in garages, the cost of repairing tires and the cost of repairing batteries reported, but asked for more time to collect additional data. The committees showed how broad a field they had entered, and desired to make a complete report on the cost of service in the three departments of garage work.

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Another committee to ascertain the cost of storage was added. This committee consists of George C. Bohn, F. E. Avery and Frank Faiser. All of the committees will make a full report at a meeting to be held Feb. 5.

Roy Williams, of Williams & Schlereth, garage and repair firm, gave an interesting talk on the cost of labor in his establishment, covering a period of 9 years. He showed from his books the complete cost, including overhead, management and other items which should be included.

Hamilton, Ont., Association Formed

HAMILTON, ONT., Jan. 19—This is the latest Canadian city to have an automobile trade association. This organization was formed late in 1916, and already practically the entire Hamilton trade is actively supporting it. Officers are: President, A. P. Goering; vice-president, W. Gastle; treasurer, H. T. Breay; secretary, G. W. Stout.

One of the first steps taken by the association was to adopt a cash basis policy for all business. This goes for everybody. The association members have also adopted a schedule for garage storage, while the price for labor has been fixed at 75 cents per hour for ordinary operations and $1 per hour for special experts.

The schedule for storing cars by the month follows: Six dollars per month for Ford cars, $8 per month for cars having a wheelbase between 100 and 120 in., and $10 per month for all cars with over 120-in. wheelbase. Other fixed charges are: One dollar per car, excepting Fords, for one-night storage and 75 cents per night for a Ford. Storage for any car for any part of a day will be 50 cents.

The Hamilton association is working on a plan for the establishment of a clearing house for used cars. This clearing house would have an appraiser, whose duty it would be to set a fair valuation for used cars. This valuation would be recognized by every member of the Hamilton association, and the owner of such a car would know that he would secure only the appraised amount for it in a transaction for a new car. The clearing house would be operated on a commission basis, and the used cars of any one make would be returned to the Hamilton sales representative for that make or would be disposed of by sale.

St. Louis Ford Dealers Organize

ST. LOUIS, MO., Jan. 22—The sixteen Ford dealers in this community have organized and will have regular meetings to discuss common problems. The first united action is joint advertisements in newspapers and street cars. The street-car ads praise the service with Ford cars and name all of the dealers. The newspaper ads are car-selling arguments.

WHAT LOCAL SHOW MANAGERS *ARE DOING*

Tractor Space All Gone

KANSAS CITY, Jan. 19—The remarkably increasing interest in tractors is sufficiently indicated in the reservations for space at the Kansas City Tractor Show, Feb. 12 to 17, on the Union Station Plaza, the same week as the automobile show. Practically all the space is now taken. Motors are now being installed to operate the tractors and other farm power machinery that will be displayed.

Following are the exhibitors who are now making their definite arrangements for displays:

Sandusky, Gile Motor Co., Huron Boyer, Russell, K. C. Hay Press Co., Aultman & Taylor, I. H. C., Herder, Parrott, Auto Plow, Bull Tractor, Peoria, B. F. Avery, Avery, Hart Parr, Emerson-Brantingham, Huber, Velie, Bates Steel Mule, Happy Farmer, Allis Chalmers, Waterloo Boy, Minneapolis Steel & Machinery Co., Sweeney Iron Horse, Advance-Rumely, Tracford, Universal, Case Plow Works, Case T. M. Co.

Wilmington Gets Show Stage Ready

WILMINGTON, DEL., Jan. 15—The following committee has been appointed to assist J. H. Nixon, director, in arranging for and managing the third annual Wilmington automobile show, which will be held at the Hotel duPont the week of Jan. 29: Harry T. Graham, Enoch Moore, Jr., Harry N. Partington, James H. Rosen, E. C. Ulrich and Truman W. Campbell.

The exhibitors will be as follows: A. B. Rothacker Rubber Co., Central Garage, Packard Motor Co., Thomas Hughes, duPont Fabrikoid Co., Bamberger & Robbins, Banks & Bryan, Gilpin, Van Trump & Montgomery, John H. Minnick, Delaware Cycle Co., Cahill & Co., Harry R. Loose, Tire Shop Co., Moore Automobile Co., Diamond State Automobile Co., Delaware Garage, Automobile Supply Co., Foss-Hughes Co., Ford Repairs Co., Delaware Motor Sales Co., Wilmington Automobile Co., White Brothers, Hercules Motor Co., Star B Motor Co., Marmaduke Motor Co., Howell Automobile Co., Atkinson Automobile Co., Fader Brothers, Gomery-Schwartz Motor Co., Sweeten Wilmington Co. and the Unger Storage Battery Co.

Bigger Building for Cleveland Accessory Show

CLEVELAND, Jan. 22—W. B. Davis, president of the company which conducted the exclusive accessory show held at the same time as the motor car show, and in a separate building, states that the article in Motor World on the show is not correct and that, far from being a fizzle, the show was quite satisfactory to the management. Davis says:

"Our attendance during the entire week was more than satisfactory, averaging between 6000 and 7000 each day, and a very large percentage of the attendance really placed orders with the exhibitors. More than half of the exhibitors have signed space for next year, and before the show closed the management had opened negotiations with Mayor H. L. Davis, of Cleveland, for the use of the new Municipal Auditorium which is to be erected in Cleveland. This will be none too large to house the accessory exhibit in the future."

Kansas City Reducing Spaces

KANSAS CITY, Jan. 19—The management of the Kansas City show will meet this week to figure a way to reduce the space allotted to each exhibitor or to those who will require more than one section. Enough applications for space to exhibit motor cars have been received to fill one more floor than the available space in the Case building. Cars will occupy four floors, not far from 200,000 sq. ft., and 20 sq. ft. had been allotted as a single space. So many of the dealers have been adding new lines, however, that the demand for double spaces is great. The Kansas City Motor Car Dealers' Association is larger than for the past three years; it has 60 members, 10 new ones having been added during the past year.

The accessory show will be held on one floor—and another entire floor could be filled with the exhibits that are offered. Entries will be closed Jan. 20.

Dodge City Plans Show

DODGE CITY, KAN., Jan. 22—A motor car show has been decided upon by the dealers of this city, to be held in February. The show association has already made arrangements to rent a tabernacle, recently erected for the joint use of several churches in a revival, and 30 reservations for space have been made.

Des Moines Reservations Pour In

DES MOINES, IOWA, Jan. 16—Reservations now have been made for the exhibition of fifty different makes of cars at the Des Moines automobile show Feb. 19 to 24. Six accessory concerns also

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have made reservations. Des Moines truck dealers have perfected their plans for a truck show at the Auditorium during the week of the show at the Coliseum. Carter Hull, William Gibson and H. W. Garner are in charge of the arrangements. Three-fourths of the available floor space already has been taken by local truck concerns representing fifteen different makes of trucks. The management of the show is in the hands of E. C. Reese, who represents the Kelley-Springfield truck in Des Moines.

Dealers to Stage Own Show

MILWAUKEE, Jan. 20—Instead of giving the profit to be derived from a district motor show to an outside promoter, motor car dealers of Manitowoc and Two Rivers, Wis., have decided to conduct their own exposition. A year ago F. C. Borcherdt, Jr., arranged a show in Manitowoc. He recently announced plans for a second show. Dealers in the two cities, which are close to each other, then decided that they might as well come in on any profit that is to be made, and organized an association under the name of Manitowoc Automobile Dealers' Association, which will not only conduct the show this year but will be a permanent organization for mutual improvement. Jay Hall, of Hall Bros., was elected president, and Leroy Anderson, of L. J. Anderson & Co., was chosen secretary. Dates selected for the show are Feb. 2, 3 and 4, and the place is the Manitowoc Opera House.

"Style Show" for Atlanta

ATLANTA, GA., Jan. 22—Managers of the Southeastern Automobile Show, which will open in the Auditorium-Armory Feb. 24, have completed arrangements with the retail merchants of the city whereby the latter will stage their style show, as the "spring openings" have recently been termed, in that week. The two forces will join in advertising the week throughout the Atlanta trade territory. The style show consists of displays of new models in the various stores and specially dressed show windows, and each year draws many visitors. This year it will be especially important because of the flood of money in the South.

Show Profits for Good Roads

MADISON, WIS., Jan. 20—The Madison Automobile Dealers' Association, in perfecting plans for its sixth annual show, the first under one roof, has arranged to turn over all of the net profits of the exposition to the Madison Good Roads Association, which devotes its entire effort to the improvement and maintenance of highways in Dane County. Madison is the capital of Wisconsin.

Prominent Tradesmen Assume New Duties

Resignations and Promotions Place Workers in New Places

O. W. Harris has been appointed sales manager of the Seattle Automobile Co., Seattle, to succeed manager Harvey, who is retiring. Harris has been connected with the Maxwell and Chandler distributers for the past 6 months.

Frank J. Hunt, purchasing agent for the Weston-Mott Co., Detroit, has resigned to become the purchasing agent of the A. O. Smith Co., of Milwaukee. It is reported that Fred Wade, purchasing agent for the Buick Motor Co., will take care of the purchasing department of the Weston-Mott Co. in addition to his present duties.

Roy F. Moore, who was to have been director of sales for the Champion Motors Co., of Cleveland and Fulton, Ill., has informed that company that he will be unable to fill the position in time to be of service.

C. F. Tollzien, purchasing agent of the Packard Motor Car Co., has been made production manager and will retain his work as purchasing agent and manager of the service division. **D. F. Roberts** has been made the factory manager; he was formerly the superintendent of the factory. **J. E. Lcher** has been appointed manager of the motor carriage division in charge of chassis and body manufacture. **R. N. Brown** has been made superintendent of the chassis division, and **L. E. Jolls** has been promoted to be mechanical superintendent.

Charles D. Hastings has been elected as vice-president and general manager of the Hupp Motor Car Corp. Hastings is an old member of the Hupp organization, and except for the last 2 years has been identified with that concern since its inception.

H. M. Fletcher, who was formerly district manager for the Maxwell Motor Car Co., has become the district representative in the Southwest for the Mitchell Motor Car Co., Racine.

F. H. Berry, California sales representative for the Hal Motor Car Co., died suddenly last week. Wright Webb, central district manager has been sent West to look after the company's affairs.

David McKay has become the Michigan sales representative for the Michigan Electric Welding Co., a member of the Steel Products Co.

Henry McLaughlin, former superintendent for Golden, Belknap & Schwartz, has been appointed manager of the Detroit plant of the Lewis Motor Corp.

W. R. Tracy has been made assistant sales manager of the Oakland Motor Car Co., Pontiac. Tracy has been connected with the Oakland company for several years and was formerly the manager of the Michigan branch.

E. S. Hilton has been made the retail manager of the Studebaker branch in Detroit.

D. C. Selheimer, who was formerly in charge of the motor and axle divisions for the Packard Motor Car Co., has been made factory manager for the Hal Motor Car Co., Cleveland.

Frank R. Farnham has been appointed director of sales and advertising for the Gibson-Hollister Co., Jamaica Plain, Mass. Formerly he was associated with the McGraw Publishing Co., New York.

Van N. Marker has again been placed in charge of the Chicago territory of the Adams-Bagnall Electric Co., Cleveland. His headquarters are Machinery Hall, 549 W. Washington Blvd.

Charles Johnson has resigned as factory representative of the Lovell-McConnell Mfg. Co. and has become general factory representative with offices in Detroit.

C. A. Bonniwell, who for the past two years was assistant sales and advertising manager of the Auburn Automobile Co., Auburn, Ind., is now associated with H. Walton Heegstra, Inc., Merchandising and Advertising Service of Chicago.

C. L. Du Puy, Atlanta, has been named Southern district manager for the Selden Truck Sales Co., which company he has represented in Atlanta for some time. He has not as yet disposed of his local agency.

H. E. Freeman, formerly vice-president of the American Trust & Savings Bank, Springfield, Ohio, has been appointed treasurer of the Robbins & Myers Co.

Carl Kaufman has joined the Auto Hardware and Equipment Co., New York, as general manager. This company which is a large jobber, will move from its present location in Warren Street to 256 West 55th Street.

W. L. Batt has been made sales manager of the Hess-Bright Mfg. Co., Philadelphia, and will have entire charge of its sales after Feb. 1.

A. K. Smith has been appointed production manager of the Bound Brook Oil-Less Bearing Co., Bound Brook, N. J. He has been connected with the company for the past three years.

M. A. Purvin has been made manager of the Chicago office of the United Smelting & Aluminum Co., New Haven, Conn.

E. M. Marcus has been made assistant to the treasurer and manager of the auditing and public accounting divisions of the Wallace C. Hood Service Bureau, Detroit.

Charles D. Hastings has been elected vice-president and general manager of the Hupp Motor Car Corp., Detroit.

James A. Murray, vice-president and general manager of the Seamless Rubber Co., New Haven, Conn., will take the presidency and general management of the National Rubber Co., Pottstown, Pa., March 1. Jacob G. Feist, who retires as president of the National company, becomes commercial and sales manager.

F. N. Hammond, recently branch manager, Youngstown, O., for the Goodyear Tire & Rubber Co., has been made branch manager in Cleveland, succeeding R. S. Hartzell who has been placed in charge of manufacturers' business in Cleveland and vicinity, under the jurisdiction of the Detroit district office. Hartzell's headquarters will continue in Cleveland.

F. H. Trego, who has been chief engineer of Knox Motors Co., has been succeeded by E. R. Gurney, who was formerly in the engineering department of the General Electric Co.

H. L. Kepler has been appointed purchasing agent of the Briscoe Motor Corp., Jackson, Mich. Six years ago Kepler left the National Cash Register Co. with C. A. Woodruff to join the Chalmers organization where he was associated with Woodruff as assistant purchasing agent until the present change.

E. T. McMartin has been made branch manager of the new Fisk Rubber Co. district which includes Butte, Salt Lake City, Minot and Bismark. His headquarters will be in Butte.

Nelson T. Scott, formerly of the American Electric Works, has been appointed Superintendent of traffic by the Kent Motors Corp., Newark, N. J.

F. H. Ayers has been appointed sales manager of the Fisk Rubber Co. of New York with headquarters at the company's general offices at Chicopee Falls, Mass. Ayers has been with the Fisk company for many years and was formerly supervisor of districts.

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Two Des Moines Jobbers Form $1,000,000 Combine

Hippee and States Companies Consolidate Business Which Serves 2200 Dealers

DES MOINES, Jan. 22—The Hippee-States Co., a consolidation of the Hippee Motor Supply Co. and the States Auto Supply Co., is being incorporated here with a capital stock of $1,000,000. A large and modern accessory building will be erected to house the business of the new concern. The Hippee concern has been doing a jobbing business with 1400 Iowa dealers and the States company had 800 Iowa dealer customers, both being rapidly growing concerns. Officers of the new consolidated company are: George P. Hippee, president and sales manager; H. F. Shepherd, vice-president and general manager; W. W. Maish, secretary; G. B. Hippee, treasurer and chairman of the board of directors.

Open Winter Boosts Wilmington Business

WILMINGTON, DEL., Jan. 22—Having had an open winter so far, Wilmington motor car and accessory dealers report business ahead of last year, with indications for the biggest business year yet. Incidentally, the motor registration in the State for the first month of this year is likely to equal almost the whole of last year. The total registration in 1916 was a trifle over 7000 cars. It is expected that the number this year will be between 10,000 and 12,000.

Would License All Drivers

NEW YORK, Jan. 22—Another bill has been entered in the New York State Legislature to require the registration of all drivers of motor cars. The measure is fathered by Assemblyman Joseph D. Kelly, and makes it cumpulsory upon a city magistrate to suspend the license of any driver convicted of speeding three times in one year and of any person who operates a motor car while intoxicated or who attempts to escape after having run down a pedestrian. If a city magistrate recommends it the Secretary of State may revoke licenses. Dealers are generally against the measure, and if it is not summarily killed will fight it.

"Winter Motoring Week" in Denver

DENVER, COL., Jan. 17—This is "Winter Motoring Week" in Denver, and all branches of the motor car industry report good business in spite of zero weather. In addition to special window displays by dealers, winter motoring posters are being displayed by department stores and other business concerns in the downtown district as a result of a lively campaign conducted by the Automobile Trades Association of Colorado.

This week was selected for special emphasis because the big stores are making elaborate window decorations as a welcome to the National Western Stock Show, which will start next Saturday, and the trades body believed that its winter motoring program could thus be brought to the attention of an exceptionally large number of people. The stock show management has also planned an automobile night, which will give the dealers another chance to reach the public next week.

Would Make Dealers Report All Sales

LOS ANGELES, Jan. 19—Open war is on between the motor vehicle dealers of California and H. A. French, superintendent of the State Motor Vehicle Department. The gauntlet has been thrown down by French and accepted by the dealers individually and collectively through their organizations.

Dealers in this State are supposed to report every sale they make to the motor vehicle department. This necessitates the preparation of a number of reports and submitting them to the Capitol. The dealers held there was no legitimate reason to exact such a requirement from them and many refused, or neglected, to file reports during 1916. They claimed collecting such data was within the province of the State, but it could not be required of them.

Throughout 1916 the dealers proceeded in their own way. The day of reckoning came, though, Jan. 1, 1917. Dealers had to apply for new licenses. By the payment of $25 they had been issued number plates for use on five cars. Additional plates could be obtained for $2 per set. The same numbers were to be valid for 1917. Some dealers had twenty or more sets of plates in use. They reapplied for licenses. Evidently French gave orders to look up the records. Dealers who had not complied with his ruling in 1916 were refused new licenses. Those who had complied and wanted more than five sets of plates, in some instances, were told their business did not warrant more and they were denied them.

Earl C. Anthony, a State distributer, asked for twenty-one licenses. He was allowed only twenty. Now Anthony has entered suit against French and other dealers have rallied to his support. Those who are blacklisted because of failure to file reports last year are having to pay the same license fee exacted of individual owners, which is 40 cents per horsepower. They have been notified to file their complaint and it will be adjusted on its merit.

Kansas City Row Looks for Big Building Boom

Everybody Wants Ground-floor Space and There Isn't Any Left—And Still They Want

KANSAS CITY, Jan. 22—This city is likely to have a building boom on Motor Row this spring. Every available space in the strictly automobile district is taken or contracted for and still the dealers and accessory men increase.

The difficulty is aggravated by the desire of everybody to get ground-floor space, to get the most benefit from their retail business, though some accessory dealers who are general agents for a territory are considering upstairs space, since the largest feature of their trade is the wholesale.

One of two things seems likely to happen at once, however—either a vast improvement in the character of buildings on two streets on the edge of the district, or an expansion of the district into several blocks to the southward over comparatively vacant ground.

Texas Dealers Going to Chicago

DALLAS, Jan. 19—Texas dealers are going to Chicago in a special train for the Chicago automobile show. This announcement was made in Dallas to-day. The train will leave San Antonio on Jan. 26 and will pass through Dallas the afternoon of that date. Most of the dealers in San Antonio and a number from adjoining counties will make the trip. The first special train of Texas dealers was for the New York automobile show. It was such a great success and the show proved to be of such interest that hereafter it is expected special trains to New York and Chicago will be run each year, one starting from Dallas, the other from San Antonio.

Herbert L. Connell Passes Away

MILWAUKEE, Jan. 20—Herbert L. Connell, secretary of the midwest section of the S. A. E. and instructor in motor-car practice in the Milwaukee Continuation School system since 1914, died at his home in Milwaukee on Friday, Jan. 19, aged 29 years. The funeral was held Monday, Jan. 22, and interment was in Forest Home Cemetery, Milwaukee.

The Randall Rider is Dead

NEW YORK, Jan. 22—The Randall rider is dead. This is the measure which was tacked on to the Post Office Appropriations Bill and which would have compelled business papers to pay postage in proportion to the mileage they traveled in reaching subscribers. The rider was stricken from the bill when it passed in the House of Representatives.

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Specifications of the Leading Cars

MOTOR WORLD GUIDE

Revisions Are Made in Table Every Week

Model	Motor	S. A. E.	Ignition	Carburetor	Starter	Clutch	Gearset	Wheelbase	Tires	Rims	2-Passenger	5-Passenger	7-Passenger	Coupe	Sedan	Limousine	Detachable Top
ABBOTT																	
6-44	6-3½x4½	25.3	Remy	Stmbg	Remy	DP	3	122	32x4	SS	1195	†1250	1195	1495	1820	....	....
ALLEN																	
Classic	4-3½x5	22.5	Wsths	Stmbg	Wsths	C	3	112	32x3½	SS	850	850	†850	1175	....	....	1195
AMERICAN-SIX																	
A	6-3 x5	21.6	G & D	Zenith	G & D	D	3	122	32x4	SS	....	1285	....	....	....	....	....
AMS-STERLING																	
17	4-3½x4½	15.6	Bosch	Stmbg	Bosch	DP	3	110	30x3½	SS	....	....	....	....	....	....	....
ANDERSON																	
Six-40	6-3½x4½	25.4	Wsths	Own	Wsths	DP	3	120	33x4	SS	1275	1250	*1250	....	....	....	....
APPERSON																	
6-17	6-3½x5	29.4	Remy	Rafid	Bijur	DP	3	130	34x4	SS	1750	....	1750	....	....	....	....
8-17	8-3½x5	31.2	Remy	Rafid	Bijur	DP	3	130	35x4½	SS	2000	....	2000	....	....	....	....
ARBENZ																	
	4-3½x5	16.9	Conn	Carter	Disco	C	3	108	30x3½	C	....	675	....	....	....	....	....
AUBURN																	
6-39	6-3½x5	23.4	Remy	Rafid	Remy	DP	3	120	34x4	SS	1145	1145	†1145	....	....	....	1320
6-44	6-3½x5½	29.4	Delco	Rafid	Delco	DP	3	131	35x4½	SS	....	†1535	1535	....	....	....	1785
AUSTIN																	
Hy-King	2-2½x5	39.7	Delco	Stmbg	Delco	D	6	142½	34x4½	SS	3750	3750	3750	4550	4950	5250	....
BIDDLE																	
D	4-3½x5½	22.5	Dixie	Zenith	G & D	DP	4	122	32x4	QD	2200	2350	†2275	....	....	3800	3900
BOUR-DAVIS																	
17	6-3½x4½	25.3	G & D	Stmbg	G & D	DP	3	118	32x4	QD	....	1250	....	....	....	....	....
BREWSTER																	
	4-4x5½	25.6	Bosch	Zenith	U. S. L.	C	3	125	34x4½	SS	†6500	....	....	....	7500	7700	....
BRISCOE																	
B4-24	4-3⅛x5½	16.3	Conn	Mayer	Splitdorf	C	3	105	30x3½	QD	685	685	†685	....	....	....	....
8-38	8-3 x3½	28.8	Remy	Zenith	Aplco	C	3	114	32x3½	QD	‡985	985	....	....	....	....	....
4-38	4-3⅞x5½	18.9	Remy	Mayer	Aplco	C	3	114	32x3½	QD	‡785	785	....	....	....	....	....
BRUNSWICK																	
	4-4½x5½	36.1	Bosch	Rafid	Wsths	..	3	....	....	....	....	....	1950	....	....	....	....
BUICK																	
D4 34																	
D 4-35	4-3½x4½	18.2	Delco	Marvel	Delco	C	3	106	31x4	C	660	675	....	....	....	....	....
6-44-45-46-47	6-3½x4½	25.3	Delco	Marvel	Delco	C	3	115	34x4	SS	1040	1070	‡1440	....	1835	....	....
CADILLAC																	
55	8-3½x5½	31.2	Delco	Own	Delco	D	3	132 / 125	36x4½	SS	†2240	2240	2240	2960	....	3760	2835
CASE																	
T-17	4-3½x6	21.0	Conn	Rafid	A-Lite	C	3	120	34x4	QD	†1190	....	1190	....	....	....	....
CHALMERS																	
6-30	6-3½x4½	25.4	Remy	Stmbg	Wsths	DP	3	115 / 122	32x4	SS	1230	1250	1350	1440	1850	2550	....
CHANDLER																	
17	6-3½x5	27.3	Bosch	Rafid	G & D	D	3	123	34x4	SS	†1395	....	1395	1995	1995	2695	1995
CHEVROLET																	
4-90	4-3½x4	21.7	Conn	Zenith	A-Lite	C	3	102	30x3½	C	550	550	....	....	....	....	....
F5-F2	4-3½x4	21.7	Conn	Zenith	A-Lite	C	3	112	32x3½	SS	800	800	....	....	....	....	....
D	8-3½x4	36.45	Conn	....	A-Lite	C	3	120	34x4	SS	1385	....	....	....	....	....	....
COLE																	
8-60	8-3½x4½	39.2	Delco	Stmbg	Delco	C	3	127	35x4½	SS	†1695	....	1695	....	2295	2295	2195
CROW-ELKHART																	
CE-35	4-3½x5	19.6	Conn	Zenith	Dyneto	DP	3	114	32x3½	SS	†825	795	....	....	....	....	935
DANIELS																	
8	8-3½x5	33.8	Wsths	Zenith	Wsths	D	3	127	34x4½	QDR	†2600	....	2600	....	....	4000	....
DAVIS																	
H & I	6-3½x4½	25.3	Delco	Stmbg	Delco	C	3	119	34x4	....	1195	1195	1195	1595	1795	....	1995
J	6-3½x5½	29.4	Delco	Stmbg	Delco	C	3	124	34x4½	....	....	1495	1495	....	....	....	....
DETROITER																	
6-45	6-3½x4½	25.3	Conn	Ball	A-Lite	D	3	119	33x4	SS	‡1195	1195	....	1373	....	....	1398
F	4-3½x4½	22.5	Dixie	Schebler	Dyneto	D	3	112	33x4	SS	....	985	....	....	....	....	....
DISPATCH																	
G	4-3½x5	22.5	Bosch	Rafid	U.S.L.	D	4	120	36x3½	....	1135	1210	....	1400	....	....	....
DIXIE FLYER																	
1917	4-3½x5	16.9	Conn	Carter	Dyneto	C	3	112	32x3½	SS	†795	795	....	....	....	....	....
DODGE BROTHERS																	
	4-3½x4½	24	Delco	Stewart	N.E.	D	3	114	32x3½	S	785	785	....	950	1185	....	950
DORRIS																	
L-19-6	6-4 x5	38.4	Bosch	Stmbg	Wsths	D	3	128	36x4½	SS	....	....	2475	3250	3350	3675	....
DORT																	
	4-3½x5	19.8	Conn	Carter	Disco	DD	3	110	30x3½	C	545	605	....	....	....	....	....
LOZIER																	
84	4-4½x6½	28.9	Bosch	Stewart	G & D	D	4	120	36x4½	SS	....	....	1695	....	....	....	....
82	6-3½x6	36.0	Eisman	Rafid	G & D	D	3	132	36x4½	SS	....	....	2775	....	....	....	....
LUVERNE																	
17	6-3½x5	33.7	Bosch	Schebler	Bosch	DD		132	35x4½	SS	....	....	1500	....	....	....	....
MADISON																	
4	6-3½x5	23.4	Remy	Rafid	Remy	DD	3	120	34x4	SS	....	....	....	....	....	....	....
	6-3½x5	23.4	Remy	Rafid	Remy	DD	3	115	34x4	SS	1050	1150	....	....	....	....	....
	6-3½x5	23.4	Remy	Rafid	Remy	DD	3	124	34x4	SS	†1150	1150 / 1250	1150 / 1250	....	....	....	....
MAIBOHM																	
A	4-3½x4	15.6	A.Kent	Zenith	Disco	DD	3	105	30x3½	SS	695	....	....	....	....	....	....
MAJESTIC																	
M	8-3 x5	28.8	A.Kent.	....	R & M	DP	3	125	32x4	....	†1500	1650	1650	....	....	....	....
A	8-3½x5	33.8	A.Kent	....	R & M	DP	3	135	35x5	....	†3000	3000	3000	....	....	....	....
MARION HANDLEY																	
6-40	6-3½x5	23.4	Wsths	Stmbg	Wsths	DD	3	120	32x4	SS	†1275	....	1275	....	....	....	....
6-60	6-3½x5½	29.4	Wsths	Stmbg	Wsths	DD	3	125	35x4½	SS	....	....	1475	....	....	....	....
MARMON																	
34	6-3½x5½	36.7	Bosch	Stmbg	Bosch	C	3	136	34x4½	QD	††3100	3050	3100	....	4100	4500	....
MAXWELL																	
25	4-3½x4½	21	Sims	K-D	A.Kent	C	3	103	30x3½	C	620	635	....	865	985	....	....
McFARLAN																	
	6-4½x6	48.6	Bosch	Stmbg	Wsths	DP	3	136	35x5	QDR	3750	3800	3500	....	....	....	....
MERCER																	
22-73	4-3½x6½	22.5	Bosch	Corser	U.S.L.	DD	4	132	34x4½	QDC	†3500	*3500	..	....	....	....	....
22-73	4-3½x6½	22.5	Bosch	Corser	U.S.L.	DD	4	115	32x4	QDC	3400	Raceabout, 3250	..	....	....	....	....
METZ																	
25	4-3½x4	24	Dixie	A.W.T.	G & D	F		108	32x3½	C	545	545	....	....	....	....	....
MITCHELL																	
D-40	6-3½x5	25.4	Conn	Rafid	Splitdorf	C	3	120	32x4	SS	1050	1050	....	....	....	....	....
C-42	6-3½x5	29.4	Conn	Rafid	Wsths	C	3	127	34x4	SS	‡1325	1325	1360	1850	1985	2650	....
MOLINE-KNIGHT																	
C	4-3½x5	22.5	Conn	Schebler	A-Lite	C	3	118	34x4	SS	†1450	1450	....	....	....	....	....
G	4-4 x6	25.6	Conn	Schebler	A-Lite	C	3	122	35x4½	SS	†1750	....	1840	2400	2350	....	....
MONARCH																	
	8-3 x5	28.8	A.Kent	Zenith	....	D	3	125	35x4½	....	....	....	1500	....	....	....	....
MONITOR																	
C-R	4-4½x4½	22.5	Heinse	Schebler	Heinse	D	3	108	32x3½	SS	795	795	....	....	....	....	....
N-O	6-3½x4½	25.4	Heinse	Stmbg	Heinse	D	3	115	33x4	SS	995	995	....	....	....	....	....
MONROE																	
M-3	4-3 x4½	14.4	Conn	Zenith	A-Lite	DD	3	96	30x3	DC	565	....	....	....	965	....	....
M-4	4-3½x4½	16.9	Conn	Zenith	A-Lite	DD	3	115	32x4	DC	....	985	....	....	....	....	....
MOON																	
6-43	6-3½x4½	25.3	Delco	Rafid	Delco	DD	3	118	32x4	SS	‡1295	1295	....	....	....	....	1450
6-66	6-3½x5½	29.4	Delco	Rafid	Delco	DD	3	125	35x4½	SS	†1690	....	1690	1690	2350	....	....
MURRAY																	
70-T	8-3½x5	33.8	Dixie	Zenith	Wsths	DP	3	128	34x4½	..	2500	....	2500	....	....	Chassis	2000
NATIONAL																	
Hgy	6-3½x5½	29.4	Dixie	Rafid	Wsths	C	3	128	34x4½	QDR	†1750	....	1750	2400	2350	....	....
Hgy	12-2½x4½	39.68	Delco	Rafid	Bijur	C	3	128	34x4½	QDR	†2150	....	2150	2800	2750	....	....
NELSON																	
	4-3½x4½	15.6	Bosch	Zenith	U.S.L.	D	3	104	32x4	SS	....	....	....	....	2200	....	....
OAKLAND																	
34	6-2½x4½	18.9	Delco	Marvel	Delco	C	3	112	32x4	SS	‡ 875	875	....	....	....	....	995 / 1020
50	8-3½x4½	39.2	Delco	Stmbg	Delco	C	3	127	34x4½	SS	....	....	1585	....	....	....	....
OLDSMOBILE																	
45	8-2½x4½	26.4	Delco	Johnson	Delco	C	3	120	33x4	SS	1295	1295	....	....	1850	....	1775
OVERLAND																	
85-4	4-4½x4½	27.2	Conn	Titan	A-Lite	C	3	112	32x4	SS	835	850	....	1250	1450	....	....
85-6	6-3½x4½	25.3	Conn	Titan	A-Lite	C	3	116	32x4	SS	970	985	....	1385	1585	....	....
OWEN																	
M-25	6-3½x5½	29.4	Bosch	Zenith	O-M	OM	..	125	34x4½	SS	....	3300	....	3650	....	4350	....
O-36	6-3½x5½	33.7	Bosch	Zenith	O-M	OM	..	136	35x5	SS	‡3950	†3950	3950	....	....	5000	....
PACKARD																	
2-35																	
2-25	12-3 x5	43.2	Bijur	Own	Bijur	DD	3	135 / 126	35x5	QDC	3050	3050	3050	4150	....	4450	....
PAIGE																	
6-38	6-3½x5	23.4	Remy	Rafid	G & D	D	3	117	32x4	SS	1175	1175	....	....	....	....	....
6-46	6-3½x5½	29.4	Remy	Rafid	G & D	D	3	124	35x4½	SS	....	....	1495	....	....	....	....
PARTIN-PALMER																	
20	4-3½x4½	15.6	Conn	Schebler	A-C	DD	3	96	30x3½	C	545	605	....	....	....	....	....
32	4-3½x5	19.8	Conn	Carter	Disco	DD	3	110	30x3½	C	....	....	....	....	....	....	....

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DREXEL																			
R-30-35	4-3½x5	19.6	Bosch	Stmbg	Bjur	C	3	112	33x4	....	855	855	....	....	....	....	....
	4-3½x5	19.6	Bosch	Stmbg	Bijur	D	3	118	34x4	....	†1485	....	1845	....	....	....	....
ELCAR																			
D.F.	4-3½x5	19.6	Delco	Carter	Dyneto	DP	3	115	32x3½	SS	845	845	†845	....	....	....	....
ELGIN																			
	6-3 x4½	21.6	Remy	Stmbg	Wagner	DP	3	116	33x4	....	†985	985	....	....	....	....	....
EMERSON																			
Four	4-3½x4	22.5	A.Kent	Kngstn	....	D	3	110	30x3½	C	....	395	....	....	....	....	....
EMPIRE																			
45	4-3½x5	24.0	A-Lite	Stmbg	A-Lite	C	3	116	33x4	SS	....	960	....	....	....	....	....
60-R	6-3½x4½	25.6	Conn	Stmbg	A-Lite	C	3	120	34x4	SS	†1145	....	....	....	1625	....	....
70	6-3½x4½	25.6	Conn	Stmbg	A-Lite	DP	3	120	34x4	SS	....	1235	....	....	....	....	....
ENGER																			
12	12-2½x3½	34.2	Wsths	Stmbg	Wsths	DP	3	116	32x4	SS	....	1295	....	....	....	....	....
FIAT																			
55	4-5½x6½	42		Wsths	Zenith	Wsths	D	4	140	35x5	QDC	....	....	5500	....	....	6500	....
56	6-4½x6	46.6	Bosch	Own	Own	D	4	135	37x5	QDC	‡5350	5350	5350	....	....	....	....
FORD																			
T	4-3½x4	22.5	Own	{Holly {Kngstn	....	D	2	100	30x3½	C	345	360	....	505	645	....	....
FOSTORIA																			
	4-3 x4½	14.4	Remy	Zenith	....	D	3	108	30x3½	C	....	695	....	....	....	....	....
FRANKLIN																			
9	6-3½x4	25.3	A.Kent	Own	Dyneto	D	3	115	32x4	SS	1800	1850	†1850	2650	2750	3000	....
F.R.P.																			
45-A	4-4½x6½	33.8	Bosch	Lngmre	Bosch	C	4	110	36x5r	C	7000	....	....	....	....	....	....
45-B	4-4½x6½	33.8	Bosch	Lngmre	Bosch	C	4	140	36x5r	SS	Chassis	7000	....	....	....	....	....
GLIDE																			
6-40	6-3½x5	23.4	Wsths	Rafld	Wsths	D	3	119	34x4	SS	....	1145	....	....	1325	....	....
GRANT																			
K	6-3 x4½	21.6	Remy	Stmbg	Wagner	C	3	112	32x3½	....	‡825	825	....	1050	1000	....	....
HACKETT																			
Four	4-3½x4½	22.5	G & D	....	G & D	D	3	112	31x4	SS	‡888	888	....	....	....	....	....
H. A. L.																			
	12-2½x5	39.6	....	Stmbg	Wsths	DP	3	135	34x4½	SS	2600	†2600	2600	....	....	4500	3500
HALLADAY																			
S	6-3 x5	21.6	A-Lite	Stmbg	Wsths	D	3	118	33x4	SS	‡1185	1150	....	....	....	....	....
R	6-3½x5	22.0	Wsths	Stmbg	Wsths	D	3	122	34x4	SS	1385	1385	....	....	....	....	....
HARVARD																			
4-2T	4-3 x4½	14.4	....	Zenith	Wagner	C	3	100	28x3	QD	750	....	....	....	....	....	....
HAYNES																			
36	6-3½x5	29.4	Remy	Rafld	L-N	DP	3	121	34x4	SS	....	1595	....	....	2260	....	....
37	6-3½x5	29.4	Remy	Rafld	L-N	DP	3	127	35x4½	SS	†1725	....	1725	....	2390	....	....
40	12-2½x5	36.3	Delco	Rafld	L-N	DP	3	121	34x4½	SS	....	2095	....	....	2760	....	....
41	12-2½x5	36.3	Delco	Rafld	L-N	DP	3	127	34x4½	SS	†2225	....	2225	....	2890	....	....
HOLLIER																			
186	6-3 x4½	21.6	Remy	Stewart	A-C	C	3	116	32x3½	SS	....	895	....	....	....	....	....
178	8-3 x4½	28.8	A.Kent	Stewart	Aploo	C	3	116	34x4	SS	†1185	1185	....	....	....	....	....
HUDSON																			
Super-6	6-3½x5	29.4	Delco	Own	Delco	D	3	125½	35x4½	SS	1650	....	1650	1950	2175	2925	....
HUPMOBILE																			
	4-3½x5½	22.5	A.Kent	Zenith	Wsths	D	3	119	34x4	SS	1185	1185	....	....	1735	....	....
N-U	4-3½x5½	22.5	A.Kent	Zenith	Wsths	D	3	134	35x4½	SS	....	....	1340	....	....	....	....
INTER-STATE																			
T	4-3½x5	19.6	Remy	Schebler	Remy	C	3	110	33x4	SS	875	925	†940	....	....	....	1325
JACKSON																			
349	8-3 x3½	28.8	A-Lite	Zenith	A-Lite	DP	3	118	34x4	SS	1295	1295	†1395	....	1995	....	1505
350	8-3 x3½	28.8	A-Lite	Zenith	A-Lite	DP	3	112	32x4	SS	....	....	....	....	....	....	....
	4-3½x5	19.6	Conn	Schebler	A-Lite	C	3	112	32x4	SS	....	985	....	....	....	....	....
	8-2½x4½	26.4	Conn	Schebler	A-Lite	C	3	112	32x4	SS	....	1195	....	....	....	....	....
	8-3½x4½	39.3	Conn	Schebler	A-Lite	C	3	124	34x4½	QD	....	....	1685	....	....	....	....
JEFFERY																			
Four	4-3½x5	22.5	Dixie	Stmbg	Bijur	DP	3	116	34x4	SS	1065	....	1095	....	1260	....	1320
Six	6-3½x5½	29.4	Dixie	Rafld	Bijur	DP	3	125	34x4	SS	1435	....	1465	....	1630	....	1690
JORDAN																			
Sixty	6-3½x5½	29.4	Bosch	Stmbg	Bijur	DD	3	127	35x4½	SS	1650	†1750	1650	2300	2350	3000	....
KING																			
E	8-3 x5	28.8	A.Kent	Ball	W.Lnrd	DP	3	120	34x4	SS	†1585	‡1585	1585	....	2150	....	....
KISSEL																			
642	6-3½x5½	31.54	Eismn	Stmbg	Own	DD	3	128	34x4	SS	....	1650	1850	....	2000	....	....
100-pt.	6-3½x5	25.3	Remy	Stmbg	Own	C	3	117	33x4	SS	†1195	1195	....	1635	1950	....	1635
KLINE																			
638	6-3½x4½	25.3	Wsths	Rafld	Wsths	DP	3	120	34x4	SS	1175	1195	†1195	....	....	....	....
LAUREL																			
35	4-3½x4½	33.8	Dixie	Schebler	Disco	D	3	112	32x3½	QD	†895	850	885	....	....	....	....
LEXINGTON																			
6-O-17	6-3½x4½	25.4	Conn	Rafld	Wsths	DD	3	116	32x4	QD	†1185	1185	....	1350	1350	....	....
6-P	6-4½x5½	27.2	A.Kent	Stmbg	Wsths	C	3	144	36x4½	QD	†2675	....	2875	....	....	....	....
								132									
LIBERTY																			
6	6-3½x4½	23.4	Delco	Rafld	Delco	DP	3	115	32x4		†1095	1095	....	....	1295	....	....
LOCOMOBILE																			
R-7	6-4½x5	43.3	Eismn	Ball	Wsths	DD	4	139	37x5	QDC	†4750	*4600	4600	....	....	5600	....
M-7	6-4½x5½	48.6	Eismn	Own	Wsths	DD	4	142	37x5	QDC	*5400	....	5400	....	....	6500	....
PATERSON																			
6-45	6-3½x4½	25	4	Delco	Stmbg	Delco	C	3	117	32x4	C	†1095	1095	1095	....	....	....	....
PATHFINDER																			
2B-TC-2C	12-2½x5	39.6		Delco	Stmbg	Delco	DD	3	135	35x5	SS	....	....	3250	....	....	....	....
PEERLESS																			
56-2	8-3½x5	33.8		A.Kent	Special	G & D	DD	3	125	35x4½	SS	†1890	....	1890	2700	2750	3260	....
PHIANNA																			
M	4-3½x6	24.9		Bosch	H & N	W.Lnd.	DD	4	....	32x4½	....	Chassis	....	3600	....	....	....	....
PIERCE-ARROW																			
38-C-4	6-4 x5½	38.4		Bosch	Own	Wsths	C	4	134	36x4½	QDC	4800	4800	†4800	5900	....	....	....
48-B-4	6-4½x5½	48.6		Bosch	Own	Wsths	C	4	142	37x5	QDC	5400	5400	5000	6900	....	....	....
66-A-4	6-5 x7	60		Bosch	Own	Wsths	C	4	147½	38x5½	QDC	†6400	6400	6500	7900	....	....	....
PILOT																			
6-45	6-3½x5	23.4		Delco	Zenith	Delco	DP	3	119	32x4	SS	†1150	1150	....	....	....	....	....
PREMIER																			
6-B	6-3½x5½	27.3		Delco	Johnson	Delco	DP	3	125½	35x4½	SS	†1895	....	1895	....	2900	3150	....
PRINCESS																			
4-36	4-3½x4½	22.5		Splitdorf	Schebler	Disco	D	3	108	32x3½	....	775	775	‡775	....	....	....	....
PULLMAN																			
424-32	4-3½x4½	22.5		Dixie	Stmbg	Splitdorf	D	3	114	31x4	SS	825	825	†825	....	....	....	....
REGAL																			
4-32	4-3½x4½	19.6		Heinse	Carter	Heinse	C	3	108	30x3½	DC	....	745	....	....	....	....	....
F	8-3 x4½	28.8		....	Johnson	Dyneto	C	3	115	33x4	SS	1200	....	....	....	....	....	....
REPUBLIC																			
E	6-4½x5	43.3		Delco	Rafld	Delco	C	4	133	36x4½	SS	....	†2950	2950	....	....	....	....
REO																			
M	6-3½x5½	30.4		Remy	Rafld	Remy	DD	3	126	34x4½	SS	....	†1250	1250	....	1750	....	....
R	4-4½x4½	27.2		Remy	Johnson	Remy	DD	3	115	34x4	SS	‡875	875	....	....	....	....	1025
RICHMOND																			
6-17	6-3½x5	29.4		Delco	Stmbg	Delco	C	3	124	35x4½	....	....	....	....	....	....	....	....
4-35	4-4 x4½	25.6		Dixie	Stmbg	Delco	C	3	124	35x4½	....	900	900	925	....	....	....	....
ROAMER																			
R.A.	6-3½x5	23.4		Bosch	Stmbg	Bijur	D	3	127	34x4	SS	2150	1850	....	....	....	....	....
ROSS																			
C	8-3½x5	33.8		A.Kent	Zenith	W.Lnrd.	DD	3	130	35x4½	SS	‡1550	†1550	1550	....	....	....	....
SAXON																			
B-5-R	4-2½x4	12.1		A.Kent	Rebh	Wagner	DD	3	96	30x3	DC	495	....	....	....	....	....	....
S-4	6-2½x4½	19.8		Remy	Rafld	Wagner	DD	3	112	32x3½	SS	....	865	....	....	....	....	....
SCRIPPS-BOOTH																			
D	8-2½x3½	22.0		Remy	Zenith	Wagner	DD	3	120	32x4	SS	†1285	....	....	....	....	....	1460
G	4-3½x4	24.5		Remy	Zenith	Remy	C	3	110	30x3½	C	935	....	....	1450	....	....	....
SIMPLEX																			
5	6-4½x6½	45.9		Eismn	Nwcmb	Bosch	D	4	143½	37x5r	QDC	Chassis	6000	....	....	....	....	....
SINGER																			
17	6-4 x5½	38.4		Bosch	Rafld	Wsths	DD	4	136	35x5	QD	3500	†3500	3500	....	....	4600	....
STANDARD																			
8	8-3½x5	38.8		Splitdorf	Zenith	Aploo	D	3	127	35x4½	....	†1950	....	2000	....	....	3500	2500
STANLEY																			
Stmr	2-4 x6	....	....	....	....	....	..	..	130	34x4½	SS	‡2300	2200	2300	....	....	....	....
STEARNS																			
SKL4	4-3½x5½	22.5		Remy	Schebler	Wsths	DD	3	119	34x4	QDC	††1450	1450	....	2050	....	2900	2050
SK8	8-3½x5	33.8		Remy	Rafld	Wsths	DD	3	123	35x4½	QDC	†2150	....	2150	2900	....	3500	....
STEPHENS																			
60-65	6-3½x4½	25.3		Conn	Zenith	A-Lite	DD	3	115	32x4	....	‡1150	1150	....	....	....	....	....
STEWART																			
T	6-3½x5	29.4		Bosch	Rafld	Wsths	D	3	127	34x4½	SS	‡1950	....	1950	....	....	....	....
STUDEBAKER																			
SF-4-40	4-3½x5	24.2		Remy	Schebler	Wagner	C	3	112	34x4	SS	‡930	....	940	....	....	....	1140
ED-6-50	6-3½x5	36.32		Remy	Schebler	Wagner	C	3	122	34x4	SS	‡1170	....	1180	1750	1700	2600	1380
STUTZ																			
R	4-4½x5½	36.1		Bosch	Stmbg	Remy	C	3	130	34x4½	SS	2275	†2550	*2550	....	....	....	....
SUN																			
17	6-3½x5	23.4		Remy	Rafld	Remy	DP	3	116	34x4	SS	†1145	1095	1145	....	1295	....	....
VELIE																			
28	6-3½x4½	25.3		Remy	Stmbg	Remy	DP	3	115	32x4	SS	1115	1135	†1135	1750	1685	....	....
27	6-3½x5½	29.4		Remy	Stmbg	Remy	DP	4	124	35x4½	SS	....	....	1600	....	....	....	....
WESTCOTT																			{2190
S-17	6-3½x5½	29.4		Delco	Rafld	Delco	DD	3	125	35x4½	SS	1590	1590	1690	....	....	....	{2090
WHITE																			
GAH	4-3½x5½	22.5		Bosch	Own	Own	P	4	115	32x4	QDC	‡2650	2700	.....	..	....	...	....
GED	4-4½x6½	28.9		Bosch	Own	Own	P	4	133½	36x4½	QDC	3750	....	3800	....	....	....	....
16-Valve	4-4½x5½	28.9		....	Own	L.N.	P	4	137½	37x5	....	....	....	4600	....	....	....	....
WILLYS-KNIGHT																			
88-4	4-4½x4½	27.2		Conn	Tltsn	A-Lite	C	3	121	34x4½	SS	....	....	1285	....	1950	1950	....
WILLYS																			
88-6	6-3½x5½	29.4		Conn	Tltsn	A-Lite	C	3	125	35x4½	SS	....	....	1325	....	....	....	....
WINTON																			
33	6-3½x5½	33.7		Bosch	Rafld	Bijur	DD	4	128	36x4½	QD	2685	2685	2735	3600	3900	3900	....
48	6-4½x5½	48.6		Bosch	Rafld	Bijur	DD	4	138	37x5	QD	3500	3500	3500	4500	4750	4750	....
YALE																			
8	8-3½x4½	31.25		Remy	Rafld	Disco	DD	3	126	34x	....	....	....	1350	....	....	....	....

*6-passenger. †4-passenger, ‡3-passenger.

ABBREVIATIONS—"G & D" Gray & Davis, "A-Lite" Auto-lite, "Wsths" Westinghouse, "Eismn" Eisemann, "A. Kent" Atwater Kent, "Emrsn" Emerson, "Sevsn" Sevison, "Undec" Undecided, "Brling" Berling, "Kngstn" Kingston, "Natnl" National, "W.Lnrd" Ward Leonard, "U S L" United States Lighting, "Conn" Connecticut, "Nwcmb" Newcomb, "N E" North East, "A-C" Allis-Chalmers, "L-N" Leece-Neville, "O. M." Owen Magnetic, "B-Rshm" Bosch-Rushmore, "Mgnto" Magneto, "Tltsn" Tillotson, "Atzr" Atomizer, "Rebh" Reichenbach. Clutches: "C" Cone, "P" Plate, "DD" Dry Disk, "DP" Dry Plate, "D" Disk, "G" Gearless, "F" Friction. Rims: "Q D" Quick Detachable, "SS" Straight Side, "C" Clincher, "QDR" Quick Detachable Reversible, "QDC" Quick Detachable Clincher, "R & M" Robbins & Myers.

NOTE—The figures given in columns underneath 2-, 5- and 7-passenger, represent the list catalog prices of the models. Where a tire size is given, as for instance "37x5½r," it means that the rear tires are 27x5½ and the front are of smaller dimensions.

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Coming Events

Shows

Jan. 20-27—Detroit, Mich., Sixteenth Annual Show, Detroit Automobile Dealers' Assn.

Jan. 20-27—Montreal, Can., Montreal Automobile Trade Assn.

Jan. 22-27—Manchester, N. H., Academy. Couture Bros., Mgr.

Jan. 22-27—Scranton, Pa., Armory. H. B. Andrews, Mgr.

Jan. 22-27—Rochester, N. Y., Ninth Annual Show, Rochester Automobile Trades Assn., Exposition Park.

Jan. 22-27—Buffalo, N. Y., Fifteenth Annual Broadway Auditorium, Buffalo Automobile Dealers' Assn.

Jan. 23-27—New Bedford, Mass., State Armory. Stephen D. Peirce, Mgr.

Jan. 23-27—Baltimore, Md., Baltimore Automobile Dealers & Automobile Club of Maryland, Fifth Regiment Armory. H. M. Luzius, Mgr.

Jan. 23-27—Lancaster, Pa., Lancaster Automobile Trade Association, Western Market House. R. W. Shreiner, Mgr.

Jan. 23-27—Allentown, Pa., Lehigh Automobile Trade Association, Ritter & Yost's New Garage. P. W. Leisenring, Publicity Mgr.

Jan. 23-27—Oklahoma City, Okla., W. H. Vesper, Mgr.

Jan. 24-26—Madison, Wis., Union Transfer Bldg.; L. F. Schoelkopf, manager.

Jan. 24-29—Charleston, W. Va., Armory, John B. Cromley, Mgr.

Jan. 24-27—Lewiston, Pa., First Annual.

Jan. 25-27—Asheville, N. C., Asheville Automobile Trade Association.

Jan. 27-Feb. 3—Portland, Ore., Eighth Annual, Dealers' Motor Car Association of Oregon, Armory. Joseph M. Rieg, Mgr.

Jan. 27-Feb. 3—Columbus, O., Fourth Annual, Columbus Auto Show Co., Memorial Hall. W. H. Payne, Mgr.

Jan. 27-Feb. 3—York, Pa., York County Dealers' Association, Queen Street Tabernacle. S. S. Pfeiffer, Sec.

Jan. 27-Feb. 3—Richmond, Va., First Annual, Gray's Armory.

Jan. 27-Feb. 3—Chicago, Seventeenth Annual Show, Coliseum and First Regiment Armory.

Jan. 28-Feb. 3—Wilmington, Del., Hotel Du Pont. J. H. Nixon, Mgr.

Feb. 3-10—Minneapolis, Minn., Twin Cities Automobile Show, Minneapolis Automobile Trade Assn.

Feb. 5-10—Indianapolis, Ind., Indianapolis Automobile Trade Assn., Steinhart Bldg.

Feb. 5-10—Bangor, Me., Show, Bangor Automobile Assn., Auditorium.

Feb. 7-9—Washington, Pa., Washington Automobile Dealers' Association, Washington Amusement Co. Rink. C. B. McAlister, Sec.

Feb. 7-10—Bay City, Mich., Automobile and Accessories, Armory. F. D. Shaver, Mgr.

Feb. 7-11—Kalamazoo, Mich., State Armory, Kalamazoo Automobile Dealers' Assn.

Feb. 10-17—Harrisburg, Pa., Capital City Motor Car Dealers' Association, Tenth and Market Streets. J. Clyde Myton, Mgr.

Feb. 10-17—Hartford, Conn., Hartford Automobile Dealers' Association, State Armory. B. F. Smith, Mgr.

Feb. 10-18—San Francisco, Cal., Show, San Francisco Motor Car Dealers' Assn., Exposition Auditorium. G. A. Wahlgreen, Mgr.

Feb. 12-17—Toledo, O., V. G. Kibby, 1017 Jefferson Ave.

Feb. 12-17—Louisville, Ky., Tenth Annual Show, First Regiment Armory, Louisville Automobile Dealers' Assn.

Feb. 12-17—Kansas City, Mo., Show, Kansas City Motor Car Dealers' Assn.

Feb. 12-17—Kansas City, Mo., Second Annual Tractor Show, Union Station Plaza.

Feb. 13-17—Williamsport, Pa., Armory, John Kelly, Mgr.

Feb. 14-17—Peoria, Ill., Show, Automobile and Accessory Dealers' Assn., Coliseum.

Feb. 15-17—Racine, Wis., Chas. A. Myers, Mgr.

Feb. 17-24—Albany, N. Y., Sixth Annual, State Armory, Albany Automobile Dealers' Assn.

Feb. 19-24—Bridgeport, Conn., Fourth Annual, State Armory and Casino. B. B. Steiber, Mgr.

Feb. 19-24—Pittsfield, Mass., State Armory. James L. Callahan, Mgr.

Feb. 19-24—Portland, Me., Exposition Building.

Feb. 19-24—South Bethlehem, Pa., Third Annual, Coliseum. J. L. Elliott, Mgr.

Feb. 19-24—St. Louis, Mo., Show, St. Louis Automobile Manufacturers' and Dealers' Assn., Overland Building.

Feb. 19-24—Duluth, Minn., Show, New Armory Building, Duluth Automobile Dealers' Assn.

Feb. 19-24—Syracuse, N. Y., Show, State Armory, Syracuse Automobile Dealers' Assn., H. T. Gardner, Mgr.

Feb. 19-24—Des Moines, Iowa, Eighth Annual Show, Des Moines Automobile Dealers' Assn. C. G. Van Vliet, Mgr.

Feb. 19-24—Grand Rapids, Mich., Eighth Annual Show, Automobile Business Association of Grand Rapids, Waters Building.

Feb. 19-24—Springfield, O., Memorial Hall, Springfield Automobile Trade Assn. C. S. Burke, Sec.

Feb. 21-24—Flint, Mich., Coliseum, Lake Side Park, E. W. Jeffers, Mgr.

Feb. 24-Mar. 3—Newark, N. J., N. J. Auto Trade Association, First Regiment Armory. Claude E. Holgate, Mgr.

Feb. 24-Mar. 3—Atlanta, Ga., Automobile Dealers' Assn., Auditorium.

Feb. 24-March. 6—Brooklyn, N. Y., Sixth Annual, Brooklyn Motor Vehicle Dealers' Assn., Twenty-third Regiment Armory.

Feb. 26-Mar. 3—Wilkes-Barre, Pa., Hugh B. Andrews, Mgr.

Feb. 26-March 3—Utica, N. Y., Utica Automobile Dealers' Assn., State Armory.

Feb. 26-March 3—Omaha, Neb., Twelfth Annual Show, Omaha Automobile Show Assn. Clarke G. Powell, Mgr.

Mar. 1-3—Champaign, Ill., Auto Trade Association of Champaign County, University of Illinois Armory. Leslie R. Lumley, Mgr.

March 1-3—Urbana, Ill., Show, Automobile Trade Assn. of Champaign County, Armory of the University of Illinois.

March 3-10—Washington, D. C., Middle Atlantic Motor Assn., Inc., Union Bldg.

March 3-10—Boston, Mass., Fifteenth Annual Show, Boston Automobile Dealers' Assn. C. I. Campbell, Gen. Mgr.

Mar. 5-10—Jamestown, N. Y., Third Annual, Jamestown Automobile Dealers' Assn.; Armory, C. A. Hanvey, Mgr.

March 6-10—Fort Dodge, Iowa, Sixth Annual Show, New Terminal Warehouse.

March 7-10—St. Joseph, Mo., St. Joseph Automobile Dealers' Assn., Auditorium.

Mar. 13-16—Vancouver, B. C., British Columbia Automobile Association, Horse Show Bldg.

Mar. 13-16—Fargo, N. D., North Dakota and Minnesota Auto Dealers' Association, Auditorium and Armory. W. M. Ball, Mgr.

Mar. 14-17—Trenton, N. J., J. L. Brock, Mgr.

March 14-17—Mason City, Iowa, Third Annual, Armory.

March 14-17—Davenport, Iowa, Show, Coliseum Building, Tri-City Automobile Trade Assn.

Mar. 17-24—Pittsburgh, Pa., Motor Square Garden, J. J. Bell, Mgr.

March 18-23—Cedar Rapids, Iowa, Show, Cedar Rapids Automobile Trade Assn.

Mar. 27-31—Deadwood, S. D., Fifth Annual, Deadwood Auto Show. J. E. Nelson, Mgr.

April 4-7—Stockton, Cal., Second Annual, San Joaquin Auto Trades Assn. Samuel S. Cohn, Mgr.

Sept. 2-9—Spokane, Wash., Interstate Fair.

General

Feb. 5-9—Boston, Mass., Seventh American Good Roads Congress, Mechanics Building.

Genolite in Two Models

DETROIT, Jan. 22—The Detroit Starter Co. hereafter will sell its Genolite electric lighting system for Fords in two models—type C at $2,985 and type D. These systems are the same except that the type D includes a windshield spotlight with a 7-in. door and a mirror. The type C system includes a generator, storage battery, side lamps, tail lamp and head lamp control. The equipment can be installed in 2 hours and requires no machine work. One feature of the installation is that it automatically controls the current flowing through the head lamps so that their brilliancy remains constant at all car speeds.

Helical Gears in 1917 Case

NEW YORK, Jan. 22—In the Before Show Issue of Motor World the 1917 Case car was stated to have a chain-driven camshaft. This, however, applies only to the 1916 model, the 1917 model having a four-cylinder, 3⅝ x 6 block motor, in which the camshaft drive is by helical gears of special material.

More Room for Farmer Boy

COLUMBUS, O., Jan. 19—The McIntyre Mfg. Co., makers of the Farmer Boy tractor, has purchased a tract of 12 acres on West Goodale Street, upon which will be erected a factory 100 x 200 ft. The present plant at 127 West Locust Street is too small to take care of the increased demand for tractors. The work of construction will be started as soon as the weather will permit.

Motor Car Securities Quotations

	Bid	Asked
Ajax Rubber Co.	71	72
J. I. Case T. M. Co., pfd.	86½	88½
Chalmers Motor Co., com.	32	36
Chalmers Motor Co., pfd.	——	——
*Chambler Motor Car Co.	99½	102
Chevrolet Motor Co.	115	125
Fisher Body Corp., com.	32	40
Fisher Body Corp., pfd.	93	96
Fisk Rubber Co., com.	75	85
Fisk Rubber Co., 1st pfd.	110	115
Fisk Rubber Co., 2nd pfd.	90	100
Firestone Tire & Rubber Co., com.	148	151
Firestone Tire & Rubber Co., pfd.	106	107
*General Motors Co., com.	500	——
*General Motors Co., pfd.	117	125
*B. F. Goodrich Co., com.	60¼	60¾
*B. F. Goodrich Co., pfd.	110½	112
Goodyear Tire & Rubber Co., com.	280	285
Goodyear Tire & Rubber Co., pfd.	107	108
Grant Motor Car Corp.	6	8
Hupp Motor Car Corp., com.	3	4
Hupp Motor Car Corp., pfd.	——	——
International Motor Co., com.	17	21
International Motor Co., pfd.	——	——
*Kelly-Springfield Tire Co., com.	59¾	60¼
*Kelly-Springfield Tire Co., 1st pfd.	92½	95
*Lee Rubber & Tire Corp.	23¼	23½
*Maxwell Motor Co., com.	59	59½
*Maxwell Motor Co., 1st pfd.	72	74
*Maxwell Motor Co., 2nd pfd.	39½	40
Miller Rubber Co., com.	245	250
Miller Rubber Co., pfd.	106	107
Packard Motor Car Co., com.	165	170
Packard Motor Car Co., pfd.	100½	103
Paige-Detroit Motor Car Co., com.	40	41
Paige-Detroit Motor Car Co., pfd.	9½	10
Peerless Truck & Motor Corp.	18	19
Portage Rubber Co., com.	174	177
Regal Motor Car Co., pfd.	27	35
†Reo Motor Car Co.	34	38
Saxon Motor Car Corp.	64	67¼
Springfield Body Corp., com.	70	90
Standard Motor Construction Co.	5½	6¼
Stewart Warner Speed. Corp., com.	100	101
*Studebaker Corp., com.	108½	109
*Studebaker Corp., pfd.	108½	110½
Swinehart Tire & Rubber Co.	83	87
United Motors Corp	47¾	48
*U. S. Rubber Co., com.	60½	60¾
*U. S. Rubber Co., pfd.	110½	111
White Motor Co.	50	50½
*Willys-Overland Co., com.	36⅝	37
*Willys-Overland Co., pfd.	97½	98½

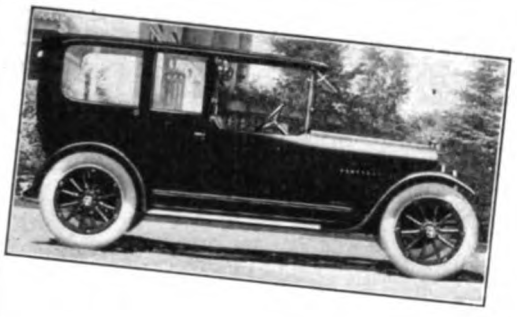
*At close Jan. 20, 1917. Listed N. Y. Stock Exchange.

†Par value $10; others $100.

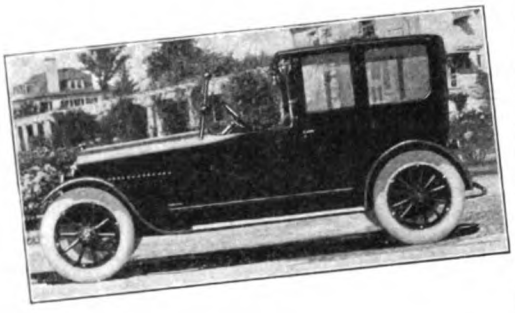
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Hudson Super-Six

Limousines *Landaulets* *Landaulet-Limousines* *Town Cars*



Coaches made by the



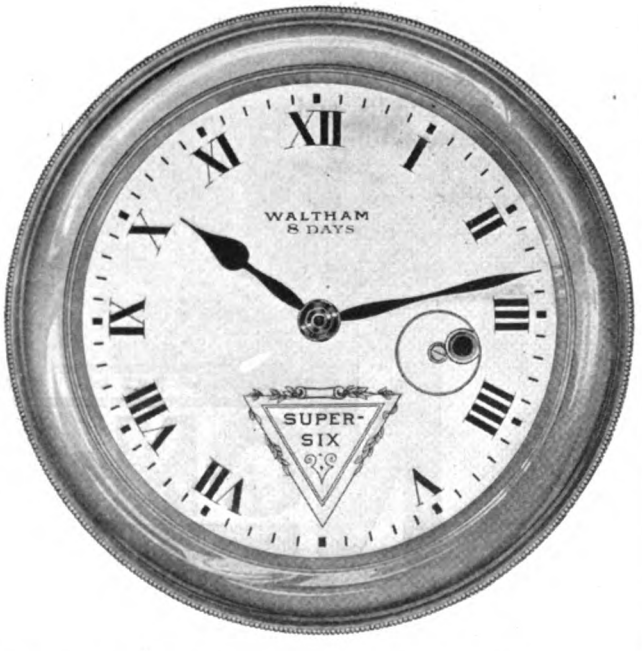
Biddle & Smart Co., Amesbury, Mass.

Here are true aristocrats among coaches, marked by beauty of design, fine workmanship, and elegant appointment. They are equipped with the Waltham Super-Timepiece.

The makers of the Hudson Super-Six know full well that the efficiency of a car is the sum of its construction plus its equipment. They realize that an inaccurate timepiece as a feature of equipment is worse than no timepiece at all, because it slanders the car of which it is a part.

The Hudson standard of completeness demands that the above enclosed models be equipped with an automobile clock that keeps time and has a winding indicator. The Hudson standard of quality, therefore, precludes the use of any but a Waltham Clock.

The Waltham Automobile Clock

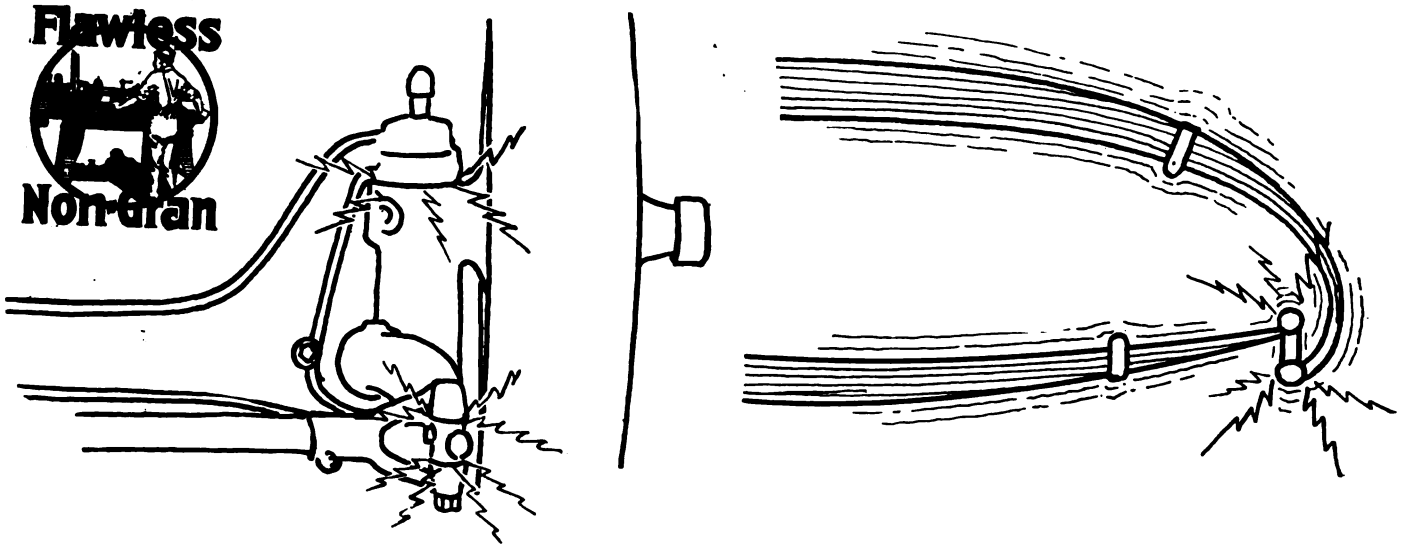


The Waltham is included in the regular equipment of the following makes of cars:

Brewster	Hudson	Pierce-Arrow
Cadillac	Locomobile	Rauch & Lang
Cole	Lozier	Rolls-Royce
Crane	Marmon	Simplex
Detroit-Electric	Mercer	Stearns
Franklin	Owen-Magnetic	Winton
Haynes	Packard	

WALTHAM WATCH COMPANY, WALTHAM, MASS.

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RATTLES!

Do you know what makes cars rattle and knock, vibrate and lose power?

The bushings; after they have become worn and loose fitting.

Bushings, you know, stand the brunt of wear in your car. They are like buffers, used to take the wear between moving parts.

There are scores of these bushings in every car and when they wear, *even slightly,* loose-play (which means rattles and knocks and power loss) invariably results.

It is vitally important, then, that these bushings be made of metal that possesses *more than average* ability to resist wear.

Non-Gran is the world's acknowledged finest bearing bronze.

It wears longer and adds a degree of security not obtainable in any other metal.

Practically all of America's quality-built cars and motors are equipped with bushings of Non-Gran. Practically all taxicabs are repaired with Non-Gran.

If you are not the fortunate owner of a car equipped with bushings of Non-Gran, when you have your car overhauled, tell the repairman to replace all worn bushings with bushings of Non-Gran, and by so doing you will save hundreds of dollars in future repair bills and your car will then be equipped with the same flawless, long-wearing bushings that enable quality-built cars to deliver from 3 to 10 times the service of ordinary cars.

You will have no trouble in getting Non-Gran bushings from your repairman, for he thinks enough of his work to use them.

No repairman need have trouble in obtaining the cored bars from which to make Non-Gran bushings, for they are obtainable from any jobber in the land.

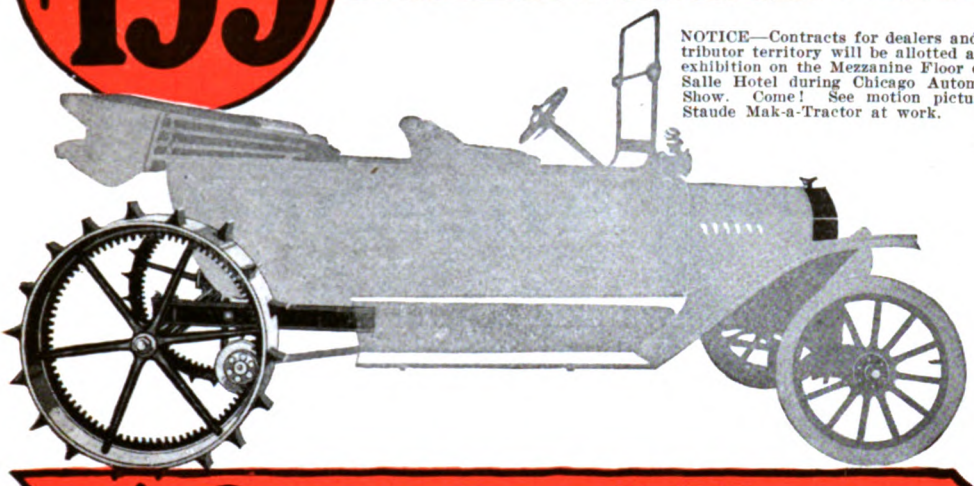
American Bronze Company
Berwyn • • • Pennsylvania

HIGH SPEED
NON-GRAN
BEARING BRONZE



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$195 and a Ford Makes a Guaranteed Powerful Staude Mak-a-Tractor



NOTICE—Contracts for dealers and distributor territory will be allotted at our exhibition on the Mezzanine Floor of La Salle Hotel during Chicago Automobile Show. Come! See motion picture of Staude Mak-a-Tractor at work.



20 Minutes from This



to This

A Sensational Money-Making Opportunity

Send Coupon Today

Listen! Don't waste a single minute. Delay may cost you the most valuable dealership in your locality. Here's your chance to make *big* money—*quick*. Easy sales—big profits on each sale—low selling cost—instantaneous turnovers. Get full details of this valuable, exclusive dealership—backed by a tremendous advertising campaign—with sales co-operation you never before heard of.

A Tremendous Sensation

Never before has any agricultural machinery created the amazing sensation of Staude Mak-a-Tractor. Farmers went wild over it at the big tractor shows. Demonstrated to thousands that it is the most efficient, *lowest cost farm power in the world*. All over the country it is now being used for all kinds of farm work. *Thousands* of consumers' inquiries *now* waiting for you.

What It Is Doing

From the Northwest to the Pacific the Staude Mak-a-Tractor is doing the work of four strong, sturdy horses—easily—efficiently—at tremendous savings. Revolutionizing farming costs everywhere. Owner tried and owner tested in all kinds of farm work—on all kinds of soil—under all conditions.

Installed in 20 Minutes

Mak-a-Tractor attachment clamps on car with four bolts. No holes to bore. Rear wheels replaced with driving pinions—integral with brake drum. To change back to touring car, merely loosen and roll back Mak-a-Tractor axle and wheels—replace driving pinions with Ford wheels.

Mak-a-Tractor frame removable in 5 minutes. Can be left on car—scarcely noticeable—weighs but 50 pounds—does not affect appearance or interfere with spring action.

Amazing Power

Converts a Ford Runabout or Touring Car into a powerful, dependable Tractor—no engine trouble. Greatest drawbar pull for its weight—fully guaranteed. The Ford starts and runs on high gear and easily does all the work of four sturdy horses. Gear reductions in the Mak-a-Tractor itself reduces Ford speed 11 times and increases the pulling power proportionately.

Astonishing Results

Pulls a 9,200 pound load of wheat up grain elevator incline on high gear. It pulled a 40x60 thresher (largest made), weighing 10,000 pounds, in a stubble field on high gear. It moved a 25 ton 1½ story house on trucks on a level dirt road—a performance so remarkable and unbelievable that moving pictures were taken to prove it.

High Clearance

The Staude Mak-a-Tractor does not reduce the high ground clearance of the Ford car.

No Strain On Ford

The Ford Motor will do the work of four horses in the field and use less than half of its rated Horse Power, at not to exceed 1,000 R.P.M. Ford itself does no pulling. Mak-a-Tractor carries Ford and pushes it ahead of it and hitch is made on the Mak-a-Tractor Axle. Ford starts and runs on high gear all the time; therefore can't strain Ford differential.

Fifth Wheel Job
2 1-2 to 5 Miles Per Hour

Special fifth wheel attachment for receiving ordinary farm wagon bolster and reach furnished at slight additional cost. Gives perfect tractor construction for hauling heavy loads. Special pinions give speed ranging from 2 1-2 to 5 miles per hour.

Special Features

Staude Ford Radiator—six times as efficient as Ford—guarantees perfect cooling for slow driving on both tractor and pleasure car. An absolute necessity on a tractor attachment.

Patent Force Feed Oiling—eliminates lubrication troubles of touring car and tractor.

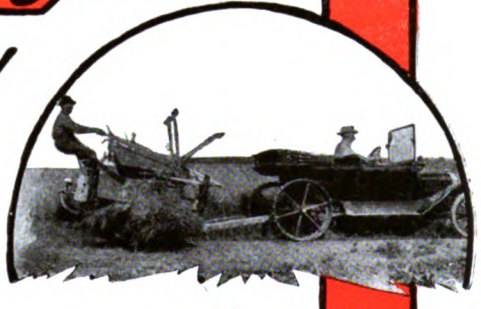
38-in. Tractor Wheels with 8 1-2 in. Face—Solid semi-steel castings—with internal gear bolted integral to wheel.

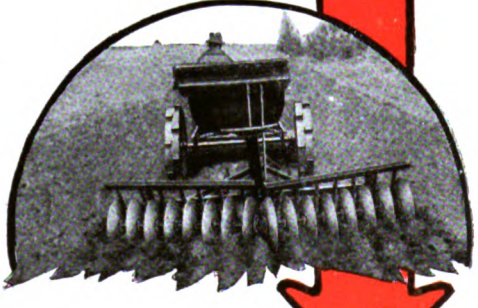
18 Staude Concave Creepers—(patent applied for) for each wheel—concave cutting edges dig into the soft soil or sand, giving maximum pulling power. No power wasted.

Cold Rolled Steel Axle—2 in. Diameter—38 in. width between frame—gives wide variations for hitch without interfering with driving or without causing side draft.

Wire At Once

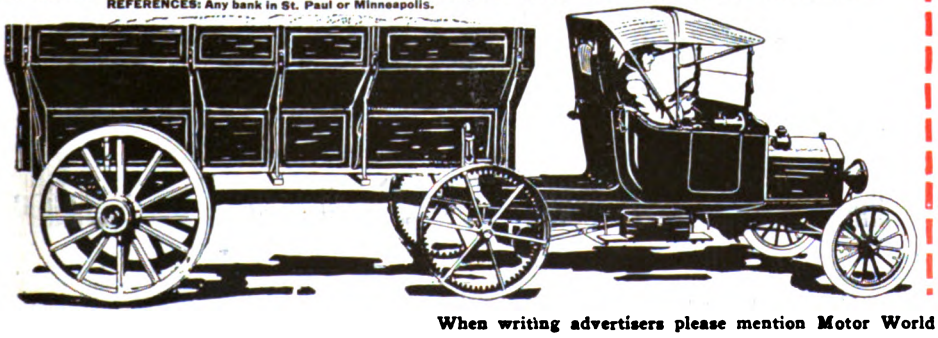
if you wish to avoid any possibility of losing valuable dealership. Not a minute to lose.





E. G. STAUDE MANUFACTURING CO., 2654 Wes University Ave., ST. PAUL, MINN.

REFERENCES: Any bank in St. Paul or Minneapolis.



E. G. Staude Mfg. Co.,
2654 West University Ave.,
St. Paul, Minn.

I am interested in Staude Mak-A-Tractor. If this territory is still open, please send Staude catalog, full particulars of dealer proposition and information about big advertising campaign.

Name .....

Street Number .....

City .....

State .....

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Skid Chains controlled from the driver's seat while your car is in motion!

Thorne Anti-Skids

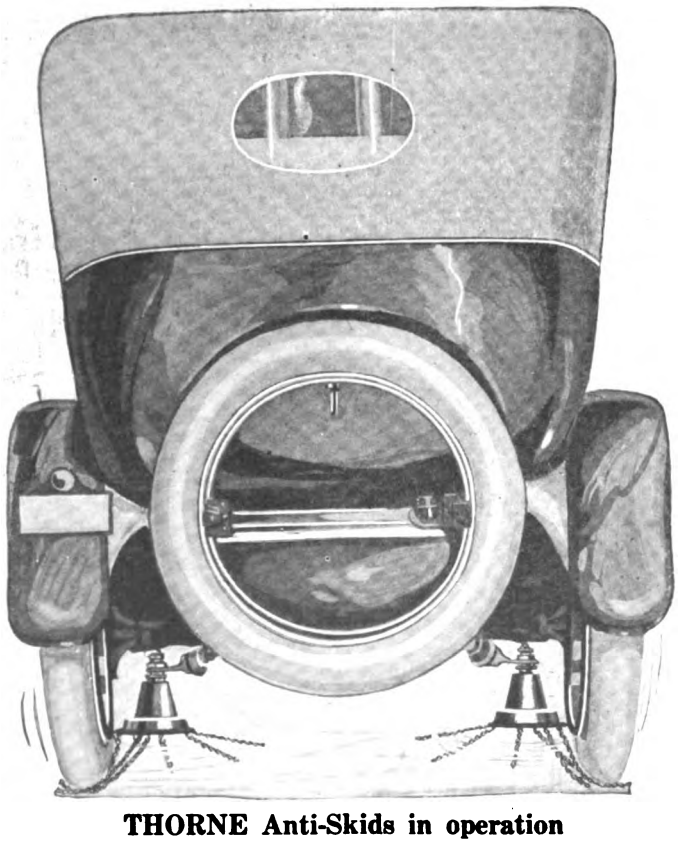
The most radical and positive skid control device ever shown the motoring public. Revolutionary, but founded on the universally demstrated principle of centrifugal force.

Mechanically perfect, proved in operation under the most rigid road and shop tests.

A sensation at the New York Show—it won the approval of experts —and the BUYING interest of car owners.

THORNE ANTI-SKIDS abolish the messy, miserable labor of applying old-type chains—***a pull at the lever does the work.***

You don't have to take any chances on that 50 or 100 feet of slimy road. Before, it was too much trouble to get out and put on the chains for so small a strip—yet that **piece of bad road might be the cause of a tragedy.**



THORNE Anti-Skids in operation

Touch the lever and you're safe.

THORNE ANTI-SKIDS last longer than other non-skid devices—don't destroy the tires—and cost not much more.

Out of sight when not in use—they work **always** when you need them.

We'll soon have a dealer in your city. But **now**—write at once for illustrated booklet.

Hill Insulating &

511-513 West 42nd Street

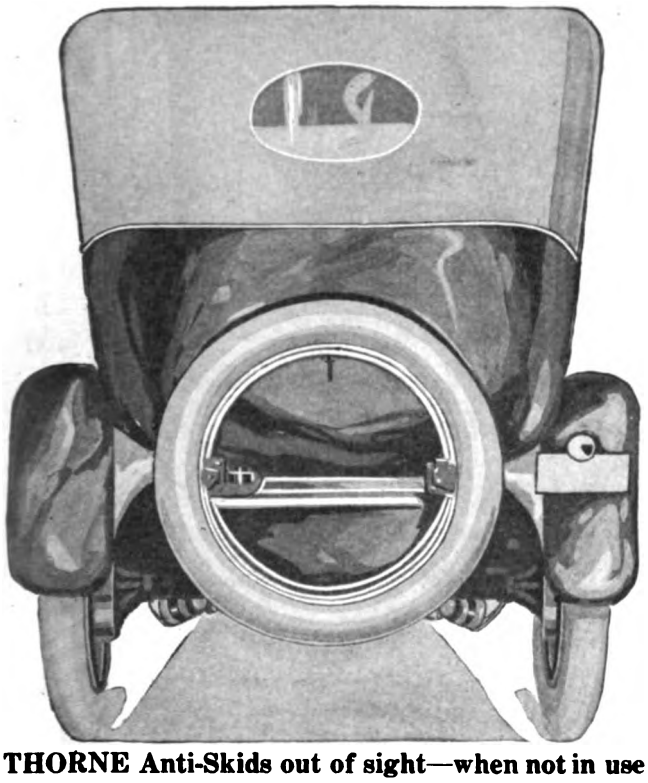
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Thorne Anti-Skids

(Patents allowed and pending, U. S. and foreign countries)

The chains are contained in a steel cone housing. A pull on the lever at the driver's seat releases the chains and brings the housing into contact with a flat friction ring attached to each wheel. This causes a rotation of the cone, producing a swirling motion of the chains which swing by centrifugal force under the rear wheels and positively prevent skid dangers under all driving conditions.

Another pull on the lever withdraws the contact, stops the motion of the chains, draws them into, and at the same time inverts, the cone. The entire device is out of sight, but ready for use at the instant necessity arises.



THORNE Anti-Skids out of sight—when not in use

Demonstrating

at the Chicago Show—
Coliseum Basement, Space 15

Manufacturing Corp.

New York City, N. Y.

This is addressed to ONE dealer in every City

Here is an unexampled selling opportunity!

It is for those men—one in each city—who have the ability, the knowledge of the trade and its needs, the *record* and the *financial responsibility* to take hold of the THORNE ANTI-SKIDS on a basis that will be to their advantage as well as ours.

Our distributor's proposition shows the way to big business and fine profits.

Easily installed—less than two hours' work for any mechanic. A simple service proposition—and an immediate big-time winner.

Wire—now—for territory reservation—or see us at the Chicago Show, Coliseum Basement, Space 15.

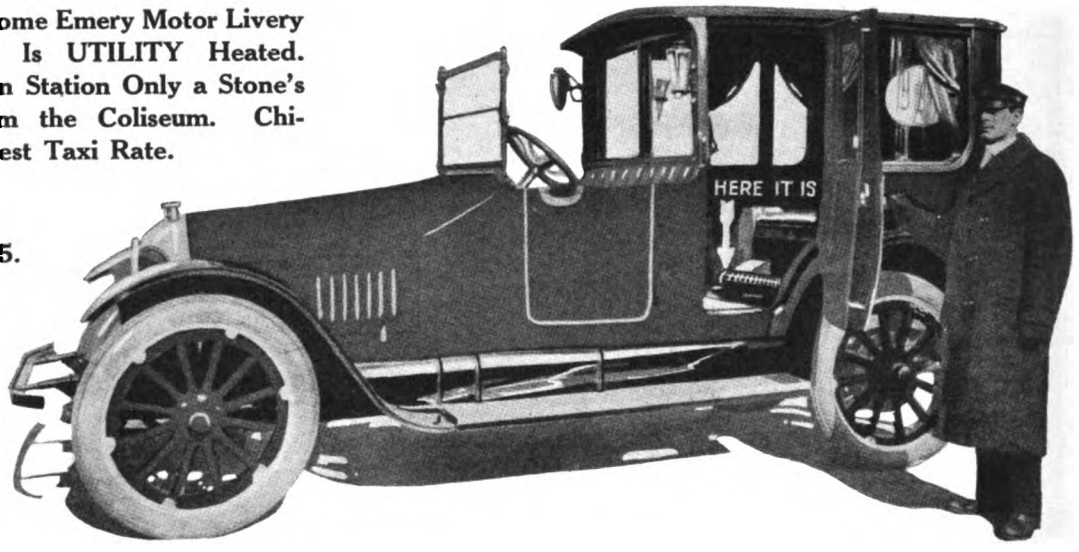
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While In Chicago

At the Show, Ride in Taxicabs Heated With UTILITY Protected Heaters

This Handsome Emery Motor Livery Town Car Is UTILITY Heated. Down Town Station Only a Stone's Throw from the Coliseum. Chicago's Lowest Taxi Rate.

Phone Douglas 115.



The Comfort And Luxury Of Chicago's UTILITY Heated Taxicabs Shows You Why UTILITY Sales Are Big And Easy

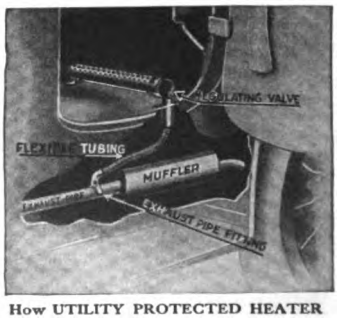
After you ride in one of Chicago's UTILITY Heated taxicabs—actually feel the comfort and know the luxury of driving through cold winter weather in a car as warm as you want it, you will make up your mind to sell UTILITY Protected Heaters forever.



Phone to our factory. Drive over to see us. Think of the cold cars back home—and the chance to make them UTILITY warm, with UTILITY profits.

Big February and March business awaits UTILITY dealers on this all-year seller.

You get a UTILITY demonstration every time you ride in an EMERY Cab, at Chicago's lowest taxi rate.



How UTILITY PROTECTED HEATER Is Attached to the Exhaust

HILL PUMP VALVE COMPANY
Archer Ave. and Canal St., Chicago
Mfrs. of Famous UTILITY Auto Specialties.

Standard Model $15

Utility Jr. For Fords $7.50

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See The Improved 1917 Model

GEARLESS
DETROIT
MOTOR-DRIVEN
TIRE PUMP
Patented August 24, 1915

At The Chicago Show

Jobbers—Dealers

There Is a Prospect in Practically Every Car Under $1000

Every car in your territory, driven by a man who has to pump the tires by hand, is a live prospect for a **quick sale, with liberal profits.**

The big bulk of pleasure cars—those in the class of $1000 and less—mostly **driven and cared for by their owners,** are not standardly equipped with power tire pumps.

These are the thousands of cars the DETROIT Gearless Motor-Driven Tire Pump is built to fit. **These are the owners who buy.**

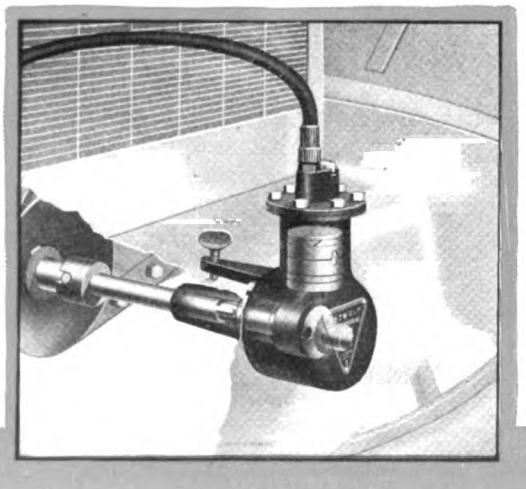
Detroit Gearless Motor-Driven Tire Pump drives direct from the motor crank shaft. On and off in a jiffy. Carries in the tool box. Attached without even raising the hood. Most popular type of power tire pump—**at a price that sells.**

Write for complete details and dealers' liberal discounts

DETROIT ACCESSORIES CORPORATION
520 HILLGER AVENUE **DETROIT, MICH.**

Sells to the Owners of the Most Used Cars—

Briscoe, Dodge, Chalmers, Hudson, Overland, Reo, Stearns, Saxon 1916 and Studebaker



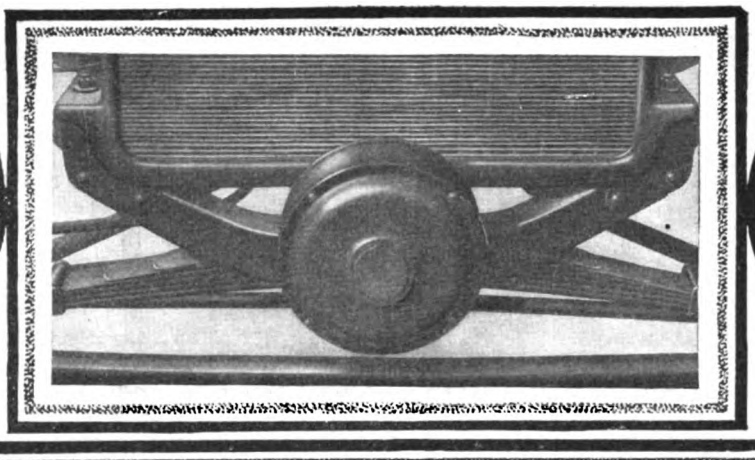
Retail Price Only

$10

Complete

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BERNS Electric Starting & Lighting System



$55 for FORDS

The announcement of the Berns Starting and Lighting System for Ford cars has brought us a veritable avalanche of inquiries—and orders.

They have come from every State in the Union.

And they all express the same instant confidence in and appreciation of the simplicity that is the dominant idea back of Berns design.

There is no doubt but that the price of the Berns, $55 complete, makes a distinct appeal.

But, stronger than any price appeal is the mechanical simplicity and directness of operation that everybody understands and appreciates.

The men who drive Ford cars and the men who sell Fords know the added value of the Ford with this light-weight practical device.

They know that a starting device that turns the Ford motor from 190 to 240 revolutions per minute—and that maintains the torque and speed of the Berns starter—cannot fail to deliver 100% efficiency.

They know that cranking the motor in the natural way by a starter that fits concentric with the crankshaft gives the most direct and effective application of power.

They know that the elimination of chains with their tendency to stretch and break is a gigantic step forward in starter construction.

They appreciate that any starter that can be proven indifferent to backfire—*that backfire simply cannot injure*—is a starter they want.

And when they realize that the *quality* of the Berns is equal to that of any starter at any price—that it operates on a minimum of current and stores enough energy to supply unfailing, steady light to all lamps, their enthusiasm knows no bounds. They want it—just as you want it.

We are sincere in our statement that the Berns Electric Lighting and Starting System for Ford cars yields to none in quality. That its price is simply an incident—made possible by its simplicity.

The Berns Electric Starting and Lighting System can be installed in two hours. The only change required is a fan belt four inches longer than regular, which we supply.

Naturally we are eager to have the very best representation. Therefore, we suggest prompt action from you for one of the greatest selling propositions of the year.

Write today.



Detroit Electric Welder Co.

252 Lafayette Boulevard Detroit, Mich.

Factory—Lansing, Mich.

$55 complete with all wiring, terminals. Willard 6-80 storage battery, generator, dash and dash equipment, such as two-button switch for lights and dimmers and battery indicator.

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For Your Car

The universally well-known fact that "Oil Rots Rubber" has led us to spare no expense nor effort to construct our Engine-Driven Tire Pumps to positively guarantee "No Oil Spray with the Air."

It is this standard of merit, as opposed to a much easier conception of building a pump down to a price, which has been influential in making the

KELLOGG Engine Driven Tire Pump

the Recognized Standard of Engine-Driven Tire Pumps for Automobiles.

Our advertising and educational literature to the automobile owner has consistently pointed out these two important features—

"No Oil Spray with the Air"—Guaranteed
"All Metal Construction"—Everlasting

with a constant reminder of the fact that carefully designed and carefully machined attachment fittings are furnished with the KELLOGG pump, ready for instant installation *on practically all makes and models of cars including*

BUICK	CHANDLER	HUPMOBILE	OVERLAND	REO
CHALMERS	HUDSON	OLDSMOBILE	PAIGE-DETROIT	STUDEBAKER

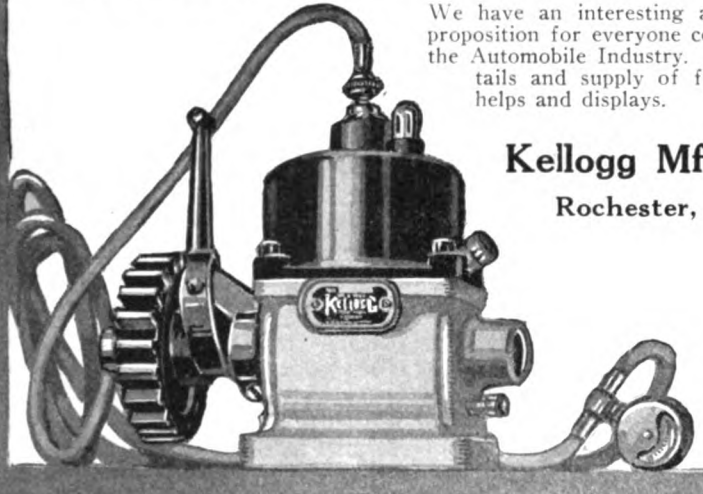
The KELLOGG PUMP with attachment fittings, air hose and tire gauge is sold for $15.00—a price that every automobile owner is willing to pay as soon as he understands the Kellogg's superiority.

The KELLOGG is the pump most used as regular equipment on all their cars by reputable motor car manufacturers, and the pump endorsed and recommended by practically all the better motor car manufacturers for special equipment on their cars on which special provision for installation is made.

A Good Margin for the Dealer and Jobber is Maintained

We have an interesting and profitable proposition for everyone connected with the Automobile Industry. Send for details and supply of folders, dealer helps and displays.

Kellogg Mfg. Co.
Rochester, N. Y.



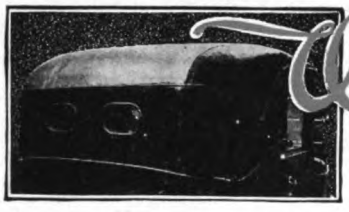


KELLOGG Engine Driven Tire Pump

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CHASE
DREDNAUT
Motor
Topping

CH



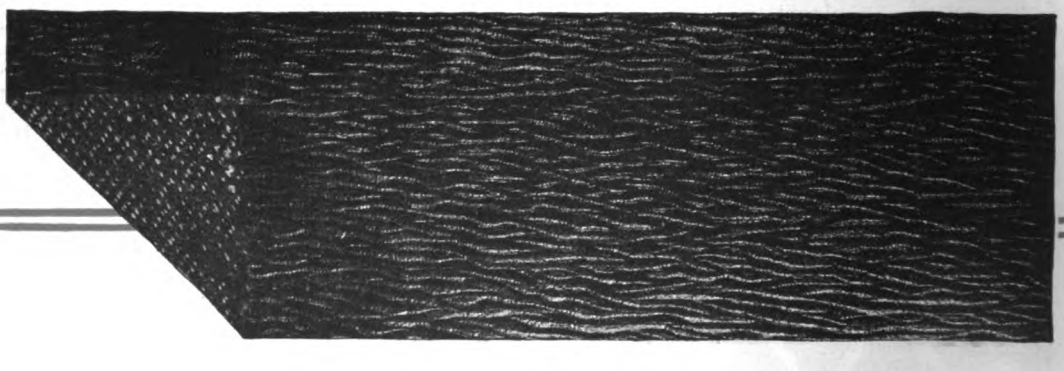
WE SPEAK WITH AUTHORITY

WITH THE AUTHORITY that comes with seventy years' Leadership in the manufacture of products of quality. With the authority that is valued highest by those who judge the future by the past; who place confidence in a house that has shown time and again not only its ability to live up to every promise, but to apply its knowledge directly to the improvement of its output, and in every respect to keep fully abreast of the latest improvements made in an industry of which it has been so long an acknowledged leader.

WE WISH TO SAY TO OUR FRIENDS that "Chase" Drednaut Motor Topping is the last word, in a handsome, durable, creaseless, easily handled top material.

THIRTY YEARS OF TOP MATERIAL MAKING show in every inch of Drednaut Motor Topping; in its surpassing richness and elegance of appearance; in its extraordinary durability; in its unequaled resistance to all weathers.

ALIKE TO CAR MANUFACTURERS, TO TOPMAKERS, TO JOBBERS AND DEALERS, Drednaut Motor Topping recommends itself on merit alone; the merit of economy in manufacture, of making up into a beautiful and substantial job, of selling on sight and staying sold on actual performance, of filling the need that it is made to fill, and filling it completely.



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ASE

CHASE
GOAT BRAND
SANFORD MILLS
MOHAIR VELVETS



TO SAY THAT "CHASE" MOHAIR VELVET IS THE UTMOST in luxury and elegance, for motor car upholstery, is stating but part of the case.

FOR IT IS ALSO DURABLE BEYOND ANY OTHER MATERIAL used for this purpose. Being made of choice Angora Hair, woven into a pile of extraordinary thickness and resilience, the wear comes on the *ends* of the fibres. It is thus easily seen (even if it had not been proved by many years of actual use) that this fabric will wear far longer than wool, silk, linen, or any other fabric so woven as to bring the wear on the *sides* of the fibres.

IT GIVES A FIRM, COMFORTABLE RESTING PLACE for the motorist, being soft and velvety to the touch and not at all slippery. Turning corners, starting and stopping, one does not slide out of the seat when riding on "CHASE MOHAIR VELVET."

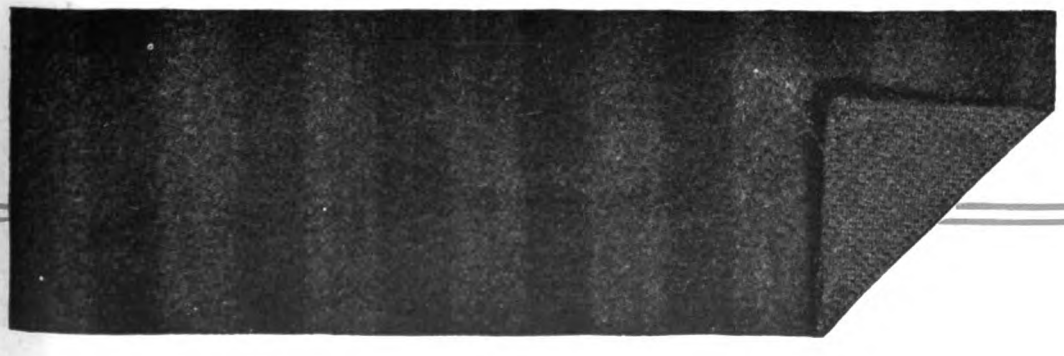
IT IS HARD TO HURT, AND EASILY CLEANED by modern methods without the slightest effect on its appearance or durability. It has been pronounced by eminent authorities the most sanitary upholstery material.

IT GIVES A SMART, STYLISH, LUXURIOUS APPEARANCE to town cars that helps enormously in selling them to discriminating patrons. When you can assure them also of its durable, weatherproof qualities, you have a strong case indeed.

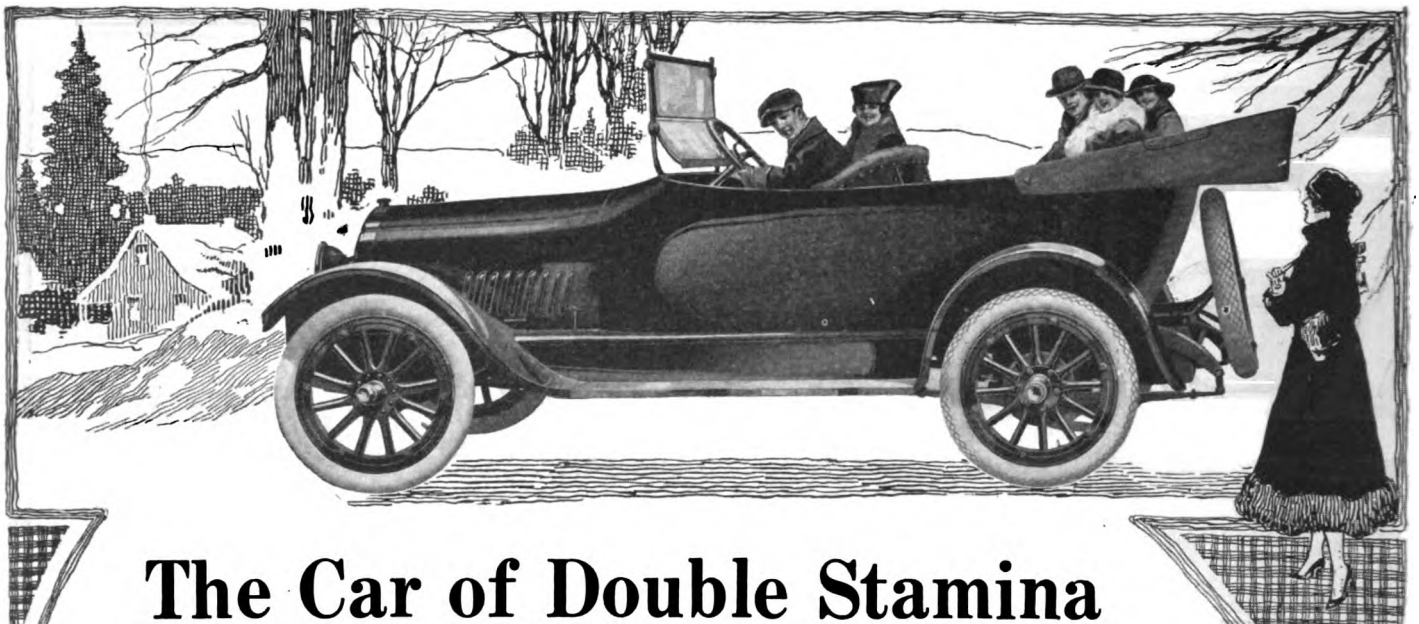
THE CHASE GUARANTEE OF QUALITY has stood for *seventy years* as the strongest support that any dealer could have behind in safely assuring his customers that they can buy with utmost confidence.

·L·C·CHASE & CO·
BOSTON
NEW YORK DETROIT CHICAGO

Other products of our mills: Plush Motor Robes, Wool Robes, Steamer Rugs, Wexford Motor Cloths for Tops and Slip Covers, Rubber Cloths for Tops and Side Curtains, Felt and Rubber Radiator Covers.



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The Car of Double Stamina

The man who buys a Stephens Six is a staunch advocate of preparedness. In the ownership of such a car, he is doubly fortified against automobile dissatisfaction.

The Stephens Six is a fortification in itself, scientifically constructed of strong materials to withstand the pounding attack of rough highways and steep hills in a long siege.

Moreover, the Stephens Six has an outer breastwork of strength—a company that for more than half a century has stood like a rock under the withering fire of industrial competition.

A Sturdy Car

There are no weak units in the Stephens Six. Motor, chassis and body are the epitome of strength, designed and built to render willing and lasting service under the most arduous conditions.

You will find no "yellow streak" in the Stephens Six. The six-cylinder motor has power and flexibility. It never protests under the lash of the taskmaster. It humbles the deep mud and sand, conquers the steep hills. On the open road it sings a song of contentment with all the speed desired. In the congestion of traffic and throttled down, it responds with a zest to the slightest touch on the accelerator pedal.

The chassis of the Stephens Six, from front axle to rear, is strong and secure. It will carry the heaviest load over the roughest road without a creak of complaint. Perfect balance and extra long springs make for comfort. The streamline body is a testimonial to the skilled carriage maker's art.

A Sturdy Company

The Stephens Six is the product of a company of character and prestige. In fifty-one years of manufacturing experience, it has gained a reputation for quality and dollar-for-dollar value that is too priceless an asset to be staked on a below-standard automobile. The Stephens Six sustains and perpetuates that reputation. The Stephens Six reflects the strength of its builder. Materially and ethically, the car has the power and stamina of the fabled Titans.

Look for the Stephens Six at the Chicago Automobile Show, Coliseum basement, Booth 13

TWO MODELS, EACH.....$1150
FIVE PASSENGER TOURING CAR
THREE - PASSENGER ROADSTER

DEALERS WILL FIND OUR PROPOSITION AND SELLING HELPS INTERESTING

Factory: FREEPORT, ILL.

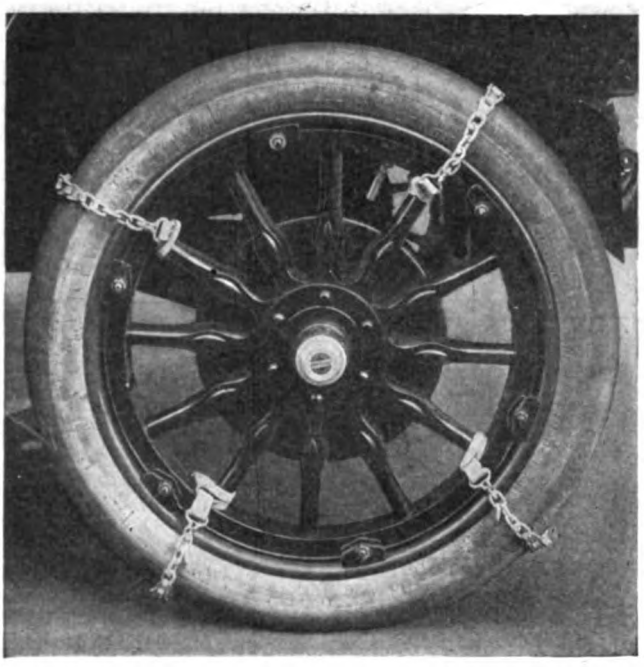
$1150
F.O.B.
FREEPORT, ILL.

STEPHENS MOTOR
Branch of Moline Plow Co.
MOLINE, ILLINOIS

STEPHENS SIX

"The Car With Punch"

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Easyon Chains

"ON OR OFF IN A MOMENT"

They are different from the ordinary chains

Grip like a mud hook
Ride like a bare tire

TRUCK CHAINS

Small sizes fit tires no larger than 3 in. Set of 8 ..... $4.00
For 3 in. or 5 in. tires. Set of 8 ..... 6.00
For 5 to 7 in. tires. Set of 8 ..... 8.00
Small dual chains for tires, smaller than 4 in. Each $1.25. Set of 8 ..... 10.00
Large dual chains for tires larger than 4 in. Each $1.50. Set of 8 ..... 12.00

THIS DEMONSTRATION DISPLAY

set up in a Dealer's window or on his counter sells these chains fast. It is doing this for lots of dealers now. Why not you?

Write for one!



THEY are used wherever ordinary chains are used. **BUT,** they can be put on in a moment, even though mired on a muddy road.

They give perfect traction.

Specially built to prevent harming the tire surface, they are light, easy to carry, and easy to attach.

Cheap to buy, smooth-running with no "bump" or drag to them, these chains are never any trouble to a motorist, and come as a perfect godsend in an emergency.

They will take you up a slippery hill or pull you out of a mudhole.

They can be attached **after** you are in trouble, frequently saving serious inconvenience if not disaster.

No motorist who has once had occasion to use them ever travels without them. They are the "stitch in time" on winter roadways.

Put on without jacking or rolling the wheel, strongly and carefully made, these chains last long and serve well. No car is completely equipped without them.

As long as you have a set of Easyon Chains in your car you can be sure you will not get stuck for want of traction. If they save you from getting stuck even once they will be worth more than their cost.

PACKED 8 IN A BAG—4 FOR EACH WHEEL
Made in three sizes

Small—Fit 3 or 3½-inch tire, price ..... $3.00 Per Set
Medium—Fit 4 or 4½-inch tire, price ..... 4.00 Per Set
Large—Fit 5 or 5½-inch tire, price ..... 5.00 Per Set

Shipped anywhere and if not satisfactory and as represented, we will gladly refund purchase price

Woodworth Manufacturing Corporation

NIAGARA FALLS, NEW YORK
Canadian Factory, Niagara Falls, Ontario

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Today the Cole Eight is a more pronounced leader than ever before.

This was especially noticeable at the New York Show, where the Cole models took both the public and trade by storm.

Production of this wonderful car is not only 200% greater than at this time last year,

—but even this increased production fails to meet the rapidly growing demand.

Such a remarkable growth points unmistakably to a new era of prosperity for Cole dealers.

United States Prices

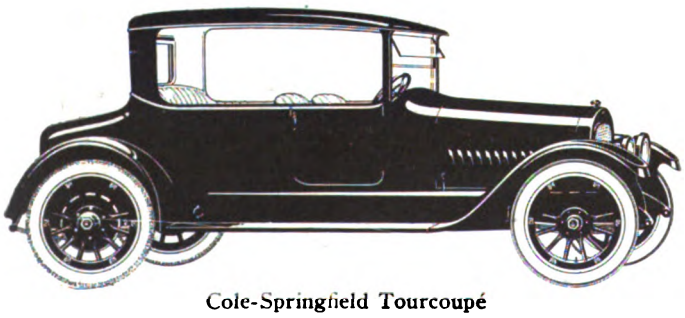
Seven-Passenger Cole-Springfield Toursedan	$2295
Four-Passenger Cole-Springfield Tourcoupé	$2295
Seven-Passenger Cole Eight Touring Car	$1695
Four-Passenger Cole Eight Roadster	$1695

Prices f.o.b. factory

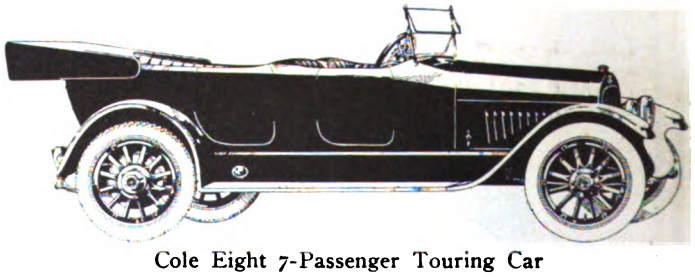
Canadian Prices

Seven-Passenger Cole-Springfield Toursedan	$3250
Four-Passenger Cole-Springfield Tourcoupé	$3250
Seven-Passenger Cole Eight Touring Car	$2395
Four-Passenger Cole Eight Roadster	$2395

Prices f.o.b. factory, duty paid



Cole-Springfield Tourcoupé



Cole Eight 7-Passenger Touring Car

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L-8

Cole popularity is based on public confidence in Cole cars by reason of their past performance and their reputation for quality and sterling performance.

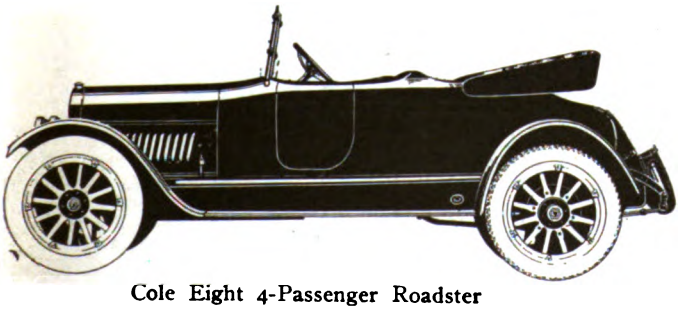
This is the type of success that high-grade dealers like to tie to.

The present Cole models are the most advanced eight-cylinder cars on the market.

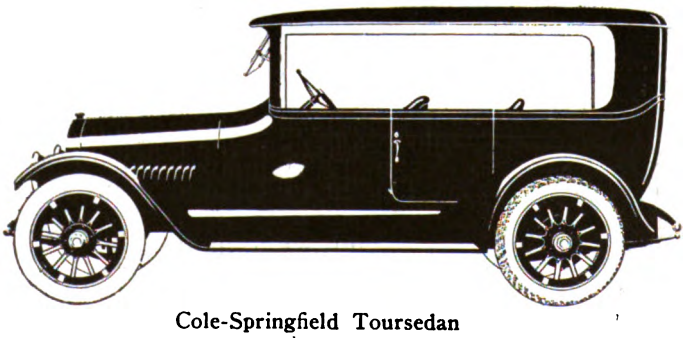
All are mounted on the same matchless chassis—the largest and relatively the lightest Eight built.

If you are interested in selling such cars communicate with us at once.

COLE MOTOR CAR COMPANY
Indianapolis, U. S. A.

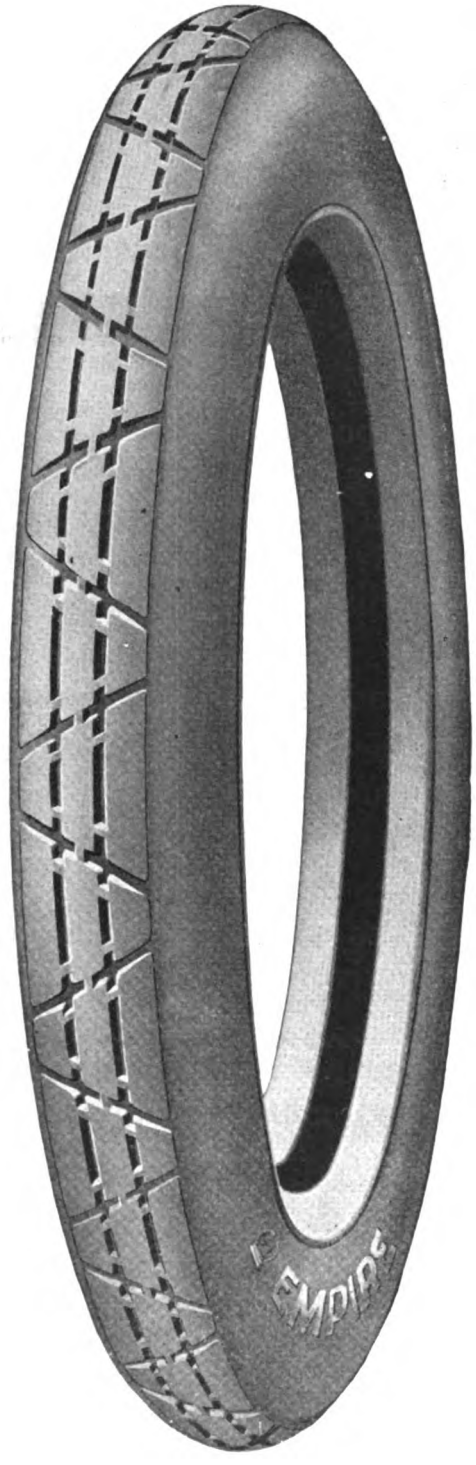


Cole Eight 4-Passenger Roadster



Cole-Springfield Toursedan

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Low Mileage Cost, Satisfactory Returns

Lowest cost per mile is argument enough to sell a tire to any motorist living. Most tires claim lowest cost, but the one that actually produces it is the tire for you to handle.

Empire Tires

do actually give more miles per dollar than any of thirteen other leading tires. Read this table—it is authentic, based on the adjustment basis of each tire—34 x 4 size.

	Cost per Mile	List Price		Cost per Mile	List Price
Empire Red	**.0062**	**$31.45**	7th Tire	.0069	$34.60
Empire Gray	**.0064**	**25.75**	8th "	.0067	33.85
1st Tire	.0064	22.40	9th "	.0072	29.10
2nd "	.0064	22.40	10th "	.0087	35.10
3rd "	.0064	22.40	11th "	.0088	24.20
4th "	.0070	24.55	12th "	.0069	35.20
5th "	.0064	22.40	13th "	.0074	26.20
6th "	.0075	26.35			

Not only do Empire Tires equal any others in low mileage costs, but excel in long profits. Empire Tires appeal to the eye and are a permanent advertisement for you. They are continuously advertised.

Empire Red Tires are adjusted on a 5000-mile basis. Empire Gray Tires are adjusted on a 4000-mile basis.

Write or wire today for our unusual proposition.

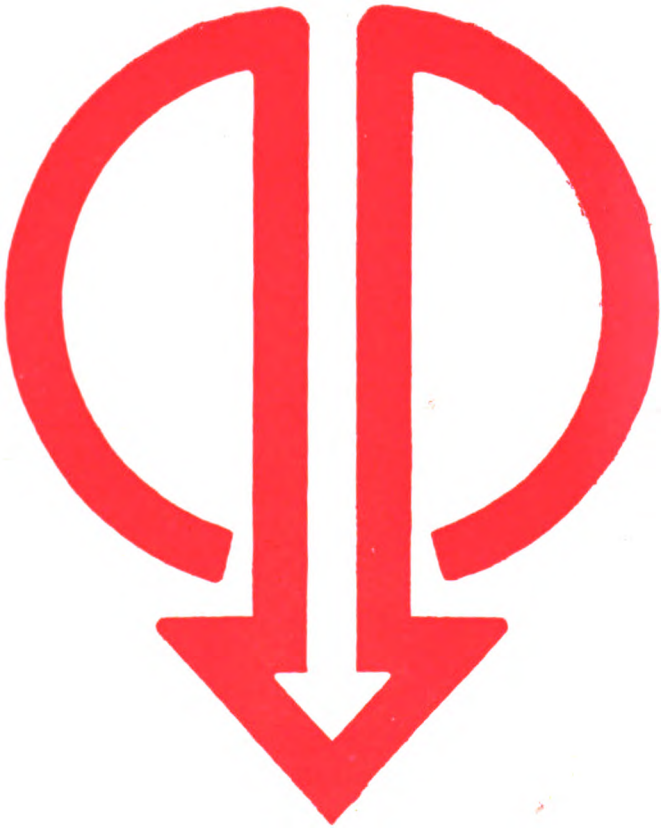
EMPIRE TIRE AND RUBBER CORPORATION
Home Office and Factory, Trenton, N. J.

BRANCHES AND OFFICES:

Boston	Buffalo	Chicago	Detroit	Newark
New York City	Philadelphia	Pittsburgh	Los Angeles	Minneapolis

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The sign of a revolution in standard methods of power application



NOW skidding and stalling, car-swaying and wheel-spinning, tire-scuffing and loss of power—dangerous and expensive for owner and driver of car, truck or tractor; baffling problems for motor engineers—all are eliminated at one stroke by the simple, positive, invariably-efficient

BAILEY

Non-Skid—Non-Stall

DIFFERENTIAL

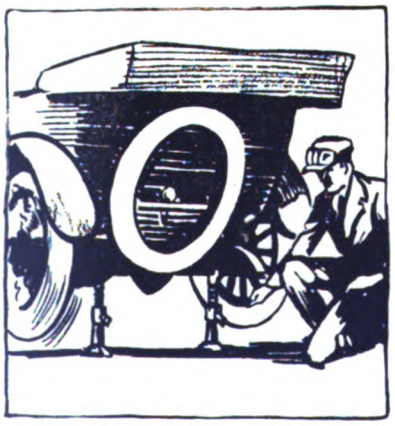
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Do You Know of Skidding, Swaying,





For turning corners and to allow for road inequalities a differential is essential.



With the ordinary differential as soon as you stop one wheel the other gets twice as much power as before.

Why a Differential Is Necessary

The rear axle of an automobile is divided in the middle and equipped with a *differential* to allow the rear wheels—which drive the car—to run at *different* speeds.

In turning corners the outside wheel must *overrun* the other. If there were no differential, one wheel would have to slide on each turn and tires would grind to pieces.

But the conventional *gear* differential—the kind that has been in common use since the first automobile was invented—gets its action through a principle which is useful only part of the time and *wasteful*—or *dangerous*—at other times.

It operates by throwing the power to the wheel which offers least road resistance.

In other words, it gives the power to the wheel that can't use it.

This allows the free play necessary for turning corners but it also is the cause of nearly *all accidents by skidding, all spinning of wheels—with consequent loss of power and scuffing of tires. It causes side-sway of the car while running at high speed, and practically all stalled-in-the-mud dilemmas.*

Habit Has Made These Evils Seem Inevitable

Yet the gear differential, because there was no better device, has been in use so long that the motor-using public has come to look upon spinning, skidding, stalling, etc., as *necessary evils.*

In fact, the public has become so used to the gear differential that few, besides engineers and manufacturers, know the real reason for these dangerous and expensive driving faults.

You Can Prove the Inefficiency of this Principle

One simple experiment shows where the blame lies.

Jack up the rear of your car and start the engine. You can stop either wheel with your hand and the other goes twice as fast as before.

The wheel you took hold of *offered more resistance* than the other and so *lost its power.*

This shows what happens when, in driving, one wheel strikes a slippery spot—ice, snow, grass, sand, mud or wet pavement. Immediately that wheel offers less resistance than the other and so the gear differential *automatically* gives it all the power. Then it spins and pulls the rear of the car out of line.

Why You Stick in the Mud

Should you happen to drive one wheel into deep mud—and have not enough momentum to carry you through by sheer weight—the wheel in the mud gets all the power and you stick there. The spinning wheel churns the puddle and digs itself in deeper and deeper—like a buzz-saw going into a log. The wheel on good ground has no power and so can't pull you out. *You are stuck.*

In difficult going the whole tendency of the gear differential is not only to pull you into the gutter but to keep you from getting out after you are there.

And this is only the spectacular side of the shortcomings of the old-style differential. It's tendency to throw the power to the wheel which can't use it causes a constant waste of fuel. Experts estimate this waste at 15%, in average going—slightly less in summer and much more in winter.

Great Waste of Tires

The tire waste, charged properly to the common differential, is vastly more important.

It has been shown that the Bailey gives car and truck owners at least 35 per cent greater tire mileage.

George D. Bailey Solved the Problem

Engineers have known all along that the differential problem would be solved some day. And it was solved, properly and finally, three years ago, by George D. Bailey.

Before a single Bailey Differential was sold to the public, the device was given a solid year of grueling tests.

Then it was put on the market, quietly, two years ago.

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he Real Cause pinning, Stalling?

The Bailey Eliminates Traction Troubles

Now 12,000 Baileys, sold practically without advertising and without sales effort—sold purely and simply on the wonderful merits of the device—have been put into service and have proved the worth of the simple, revolutionary principle on which they are built.

Since then changes and refinements have been made until today the improved Bailey Differential—brought to a state of positive perfection, tested and proved by months of the most strenuous tests—is announced to the motor car, motor truck and tractor industries—and to the public.

The improved Bailey Differential has only one thing in common with the conventional gear type: It enables the outside wheel to go faster than the other when the car is turning a corner.

In everything else it is an exact opposite.

The result is that stalling, spinning, skidding, swaying, power-wasting and tire scuffing are practically unknown in a Bailey-driven motor car or truck.

All the power goes *automatically* to the wheel that has traction and so has use for power.

This Shows How It Works

It's the same principle you use in walking.

When one foot strikes a slippery spot, your weight—your power—instantly, and without thought, is transferred to the other foot.

When one wheel strikes a slippery spot, the power, instantly and automatically is transferred by the Bailey Differential to the other wheel.

When one wheel gets in a mud hole, the other wheel, on good ground, gets all the power—and you go *right on out.*

When one wheel bounds from the ground it does not spin, so there is no scuffing of the tire, or straining of driving parts, when it hits the ground again.

When you round a corner the *inside* wheel has all the power—another anti-skidding effect.

The Bailey has no gears and does not depend on friction. It works on the simple pawl-and-ratchet principle—as old as the science of mechanics, and as positive in its action as the thrust of a piston.

For more than two years the Bailey has had the test of varied use. Twelve thousand Bailey-driven cars have given their owners an utterly new conception of driving safety, comfort, power and economy.

Now, in its final, perfected form, the improved Bailey Differential is coming into its own.

Users' Experience a Wonderful Revelation

Wherever wheels can turn Bailey owners drive their cars. They seldom think of the going at all. High-crowned clay roads, slick with a pouring rain, hold no terrors for them. *Without* chains they go through mud-swamped roads, through heavy drifts of snow, where other cars, *with* chains, can not go. Their gas bills automatically decline. Their tires last much longer. They feel safe all the time.

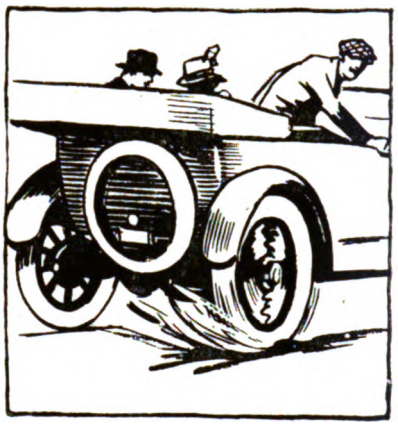
These are strong statements but we have the evidence.

Now the improved Bailey Differential is sold on a basis of money-back-without-question in 30 days.

We run no risk on this guarantee. No motorist or truck owner would ever consider driving a car or truck with the ordinary differential once he has used the Bailey.

Twelve thousand are in use now—sold practically without advertising or sales effort—by sheer weight of merit—by word of mouth from one enthusiastic user to another.

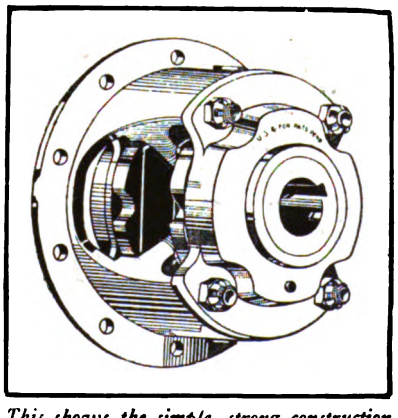
(Continued on next page)



With the ordinary differential the wheel in the puddle gets all the power so the other can't pull you out. The Bailey reverses this—puts all the power into the wheel that can use it.



When one foot has no traction the other, properly, gets all your weight and power. In the same way the Bailey throws the power to the wheel that is on good ground and can use it.



This shows the simple, strong construction of the Bailey Differential.

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Vigorous Merchandising for the Bailey Differential

The Bailey—surrounded by a Chinese wall of patents in all civilized countries—has proved itself in actual service—in thousands of instances, in practically all parts of the world.

Now the *improved* Bailey will be sold on the scale it deserves.

Strong financial interests and engineers respected by the whole of motordom now are back of the device.

The things it does are so revolutionary—its work is so important for every man who makes or sells, owns or drives a car, truck or tractor—that it is already getting *national* attention.

A bare statement of its virtues—such as that on the preceding pages—makes people want it. A demonstration, in actual use, sells it to every interested and open-minded person.

Big Replacement Business Sure to Come

There is a tremendous replacement business waiting for this *logical* differential, and we have arranged to market the device on terms that are satisfactory to the consumer, and which offer handsome margins to the established channels of trade.

Sales of the Bailey will be backed by a comprehensive and spectacular advertising campaign—a campaign in thorough keeping with the revolutionary character and importance of the device.

And remember 12,000 have been sold already—with practically no advertising or sales effort.

This is because it is not an article to be *tacked on* to a car for mere convenience, but which gets right down to the *vitals* of the machine and gives it *life, stability* and *road efficiency* which were not possible before and which cannot possibly be attained in any other way.

Any man, familiar with motor cars, and knowing these facts, must know, also, that there is bound to be a tremendous—*universal*—demand for the Bailey, for changeover purposes.

Do You Want a Share in This Business?

And we are looking for a few men who are anxious to go along with us on this business. We need distributors in several important sections. Already, as a result of our preliminary "blind" advertising in the trade papers, the news of the Bailey has leaked out and we have applicants for more territory than we have left.

But we want the best distributor possible to secure in each center. We want distributors with capital and ability to handle a "big deal"—for the distribution of the Bailey is bound to be a tremendous thing.

We ask such men to investigate our product, our plans and our standing, and to give us the opportunity to examine their qualifications.

This Opportunity Will Not Be Open Long

We suggest writing or wiring at once for details and terms, with the understanding that no contract can be made until after a personal interview.

Dealers, jobbers, garagemen and repair men should order the Bailey direct from us immediately.

We have ready, in stock, differentials for Fords, Overlands and Chevrolet 490's, constituting a very large part of the cars now in use. Differentials for other types of cars will be on the market soon.

PRICES

Improved Bailey Differential for Ford cars—equipped with ball thrust bearing $25.00

Improved Bailey Differential for Chevrolet 490's—equipped with ball thrust bearing..... 25.00

Improved Bailey Differential for Overland cars, models 38, 45, 46, 49, 49V, 50, 51, 58R, 59C, 59R, 59T, 79B, 79RC, 79T, 80C, 80R, 80T, 81T, 81R, 83T and 83R.... 30.00

The Bailey is a money-maker. Those who get in now—*on the ground floor*—will profit accordingly. Use the coupon.

$1000 FOR SENSIBLE LETTERS

BAILEY NON-STALL DIFFERENTIAL CORPORATION,
Dept. P-8 1124 Michigan Ave., Chicago.

Please send me description of the Bailey Differential, also prices and terms on which it is sold. I am a (check which)

Car owner——, Garage owner——, Repair Shop owner——,
Jobber——, Dealer——, Distributor——

Name.....

Address.....

.....

We offer $1,000, in seven prizes, for the most sensible letters written about the Bailey Differential and received by us before April 1.

First prize will be $500; second prize $250; third, fourth, fifth, sixth and seventh prizes, each $50. All prizes cash.

Any man, woman or child may compete, except those who are connected in any way with the Bailey Non-Stall Differential Corporation, with the agency which prepares the Bailey advertising, or with the publications in which that advertising is placed.

The letters must not contain more than 300 words.

They must be written about the advantages of using an automobile, truck or tractor equipped with the Bailey Differential. Arguments for the letters may be derived from personal experience or from the statements in our booklets or advertisements.

This is not a letter-writing contest in the usual sense of the term. Beauty or neatness of expression or writing will have nothing to do with the award. Decision will be made on a basis of *sense* and that alone.

Our request to the judges is merely that they award the seven prizes, in order, to the writers of the seven most *sensible* letters about the advantages of the Bailey Differential. The judges will interpret for themselves the meaning of the word "sensible."

Members of the Contest Board of the A. A. A. will pass upon the letters and award the prizes.

BAILEY NON-STALL DIFFERENTIAL CORPORATION
Dept. P-8
1124 Michigan Avenue Chicago

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Quick Starts on Cold Nights

Cold nights, speeds, roads, traffic—each of these conditions has its effect on a storage battery. But no matter what the conditions, a battery supervised by Prest-O-Lite Service will be a lively, healthy source of power.

There is a Prest-O-Lite Storage Battery of correct size for every make and model of car—backed by the great Prest-O-Lite Service organization that insures service of *real value* to car owners, dealers and manufacturers.

Prest-O-Lite Exhibit at the Chicago Show
Spaces 21, 22, 31 and 32 Coliseum

The Prest-O-Lite exhibit at the Chicago Show will be of interest to the entire automobile industry—to manufacturers, dealers and car owners.

We cordially invite you to visit our space and inspect the complete line of Prest-O-Lite starting, lighting and ignition batteries for automobiles.

Dealers everywhere are realizing larger profits on Prest-O-Lite business today than ever before. If you are unable to attend the Chicago Show, it will pay you to write for our dealer proposition.

The Prest-O-Lite Co., Inc.
U. S. Main Office and Factory, Speedway, Indianapolis, Ind.
Canadian Main Office and Factory, Merritton, Ontario, Can.
Branches and Charging Plants in all Principal Cities



Prest-O-Lite
STORAGE
BATTERY

Not only a better battery but backed by Prest-O-Lite Service

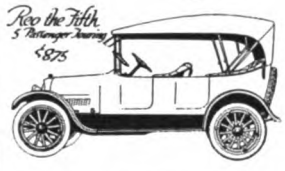
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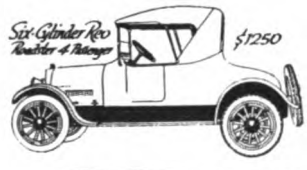
When You Come to Chicago Look the Reo Line Over















NO, WE ARE NOT looking for dealers—our present problem is to supply those we have now.

AND WE WILL SAY that, man for man, they are as clean cut, high grade a class of dealers as there are in the world.

SO THAT ISN'T THE IDEA of this advertisement.

YOU'VE BEEN A'HANKERING to look over this Reo line for a long time—when your customers weren't present to see you do it.

YES YOU HAVE—You know you have. Every automobile distributor feels that way about Reos, regardless of what line he happens to be selling now.

THERE'S A TOMORROW COMING—and you are looking forward to that. You know that it is just possible there may be a chance, some time, for you to get the Reo line for your territory.

YOU HEAR SO MUCH about the wonderful endurance, the dependability and low upkeep cost of Reos from customers, you naturally want to look and see for yourself how we Reo Folk do it.

FROM YOUR EXPERIENCE with other cars you can scarcely credit the stories users tell you about Reos—yet you know it must be true, for you hear the same tales so so often.

SO HERE'S YOUR CHANCE! All the Reos will be on view at our Chicago branch show week. Come in and see them. We won't tell! And you'll be as welcome as if you were a Reo dealer now—for there's a tomorrow coming you know.

BY THE WAY, we Reo Folk have always looked rather to that tomorrow than to the immediate present—that's why we've always built Reos the way we have.

THERE ARE TEN REO models this season—four fours, four sixes and two trucks. Can't show the trucks at the Coliseum—so you'd better come to the branch and see them all—and get acquainted.

Reo Motor Car Company

Lansing, Michigan

Chicago Branch: 1218-20 Michigan Avenue

178A







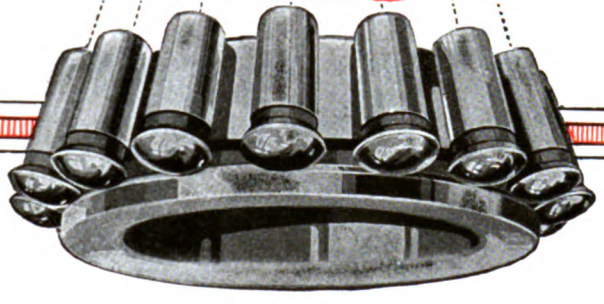
"THE GOLD STANDARD OF VALUES"

All Prices are f.o.b. Lansing, Michigan

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BOCK

Everything Rolls



Bock bearings carry the tremendous loads that *any* roller bearing is capable of carrying.

But they do *more*.

They *entirely eliminate* wearing, grinding end friction.

The bearing end of each Bock is the segment of a sphere. It *rolls* where other bearings merely scrape and slide.

Everything rolls in the Bock.

Consequently, *combined with* the greater strength of the roller bearing you get *all the good features of the ball bearing.*

Engineers are enthusiastic over the Bock.

And it is replacing all other types of motor car bearings as fast as we can fill the orders.



Ball Ends

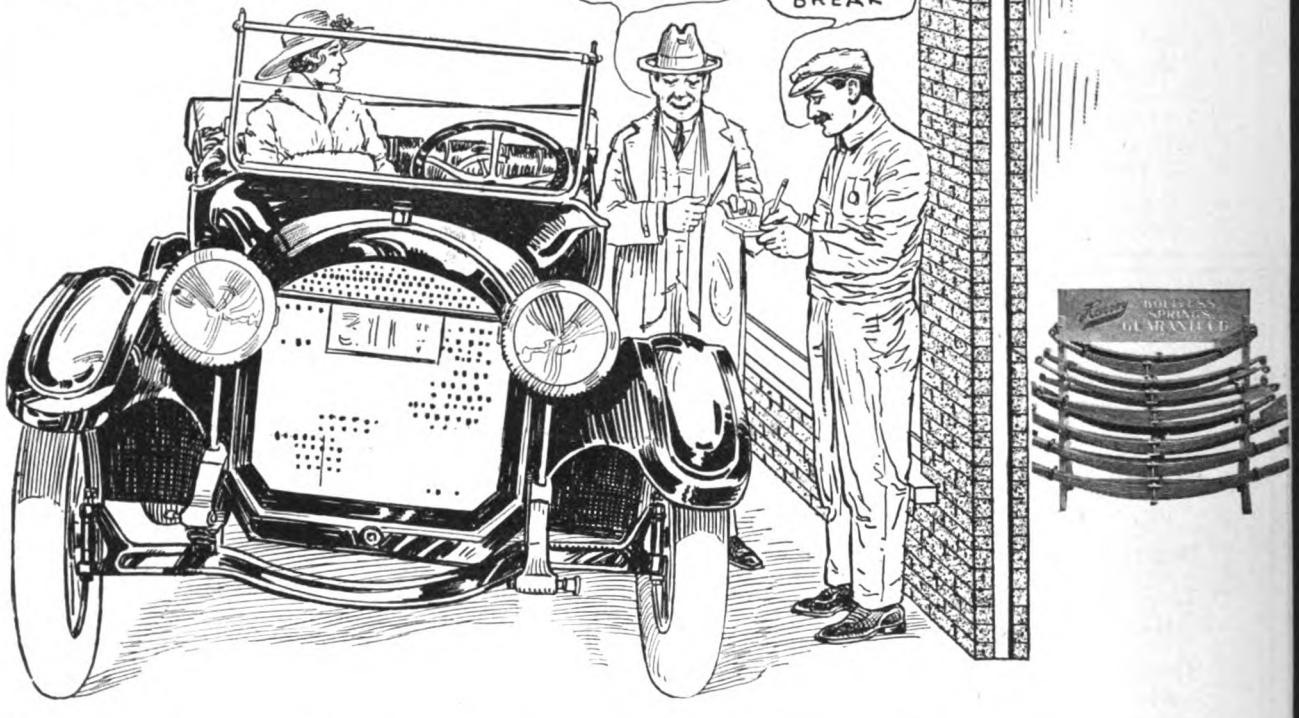
The only roller bearing with frictionless rolling end contact

The Bock Bearing Company - - - - Toledo, Ohio

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Get Your Share of the Auto Spring Replacement Business

Harvey RACINE SPRING SERVICE



WHEN a spring breaks your customer doesn't want another "just like it"—he wants one that *will not* break, and he'll be more than pleased to have you tell him about the durability and efficiency of Harvey Springs.

Why not recommend and sell these good Springs and get your full share of replacement business—and profit—instead of letting it go to the car manufacturer?

The demand for Harvey Springs is growing by leaps and bounds because the automobile public is rapidly learning about the many good qualities of Harvey Springs.

Our advertising plans for 1917 are bigger and more comprehensive than ever. The Dealer, Garageman and Repairman who handle Harvey Springs will have the benefit of all the sales-making power of an advertising campaign that practically reaches every car owner in the country.

FREE The Harvey Spring Book contains a complete list of springs for over 600 of the leading makes and models of cars—gives sizes, weights, measurements, prices, etc., and is an invaluable aid in ordering replacements. Write for copy to-day. We mail it free.

Harvey RACINE Springs Do Not Break—They are Guaranteed from End to End Against all Defects

THE HARVEY SPRING CO. 848 17th Street Racine, Wisconsin

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OUR displays at the National Automobile Shows best reflect the conscientious manufacture of our Giant line of Electrical Devices.
Our wide range of equipment is an assurance of the most comprehensive ignition service available at our branch houses throughout the country.

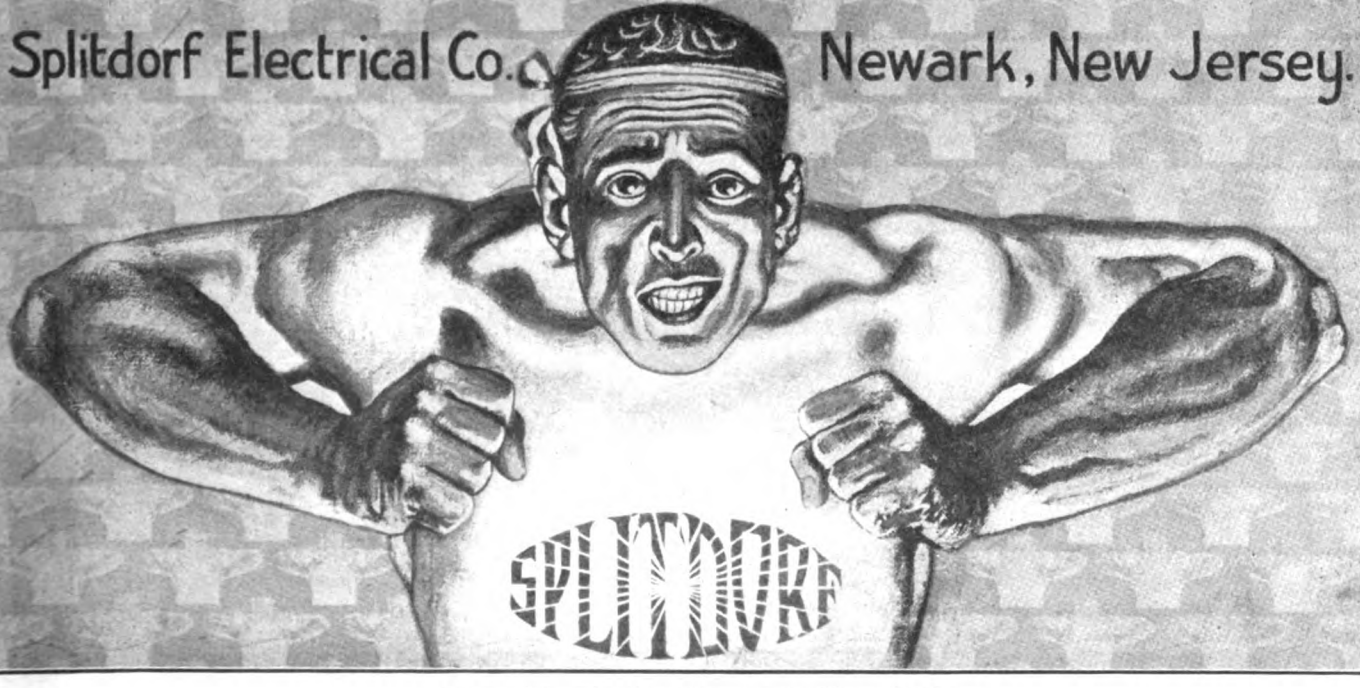
DIXIE 20TH CENTURY MAGNETO

Lighting and Starting Systems

The Plug with the Green Jacket

AMMETERS

Splitdorf Electrical Co. Newark, New Jersey.



When writing advertisers please mention Motor World

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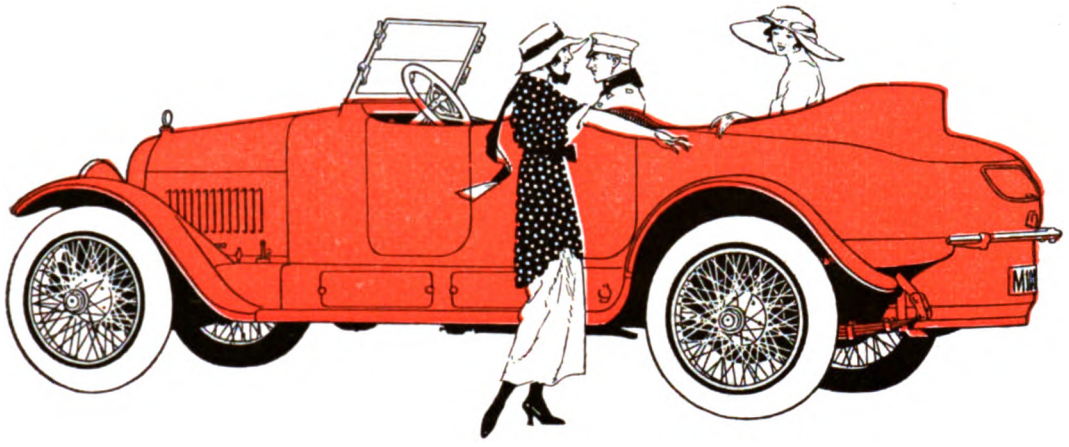


FROM the moment it was first exhibited at the New York Show the new Pathfinder Seven-Passenger Touring Roadster became the most talked-of car in America. In its daring departure from conventional design the Pathfinder arrests attention and carries conviction that here, at last, is a motor car that is really distinguished.

The beautiful body is so expressive of power, fleetness, comfort and safety, the disappearing top and concealed spare wheel and tires so logical, that you are prepared to find a chassis that is a triumph of engineering and a twelve-cylinder engine unequalled for power, flexibility and economy. The new Pathfinder is a car of utmost luxury and refinement. For the dealer the new Pathfinder Seven-Passenger Touring Roadster means prestige as well as profit.

THE PATHFINDER COMPANY
INDIANAPOLIS, U. S. A.

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ITS originality of design gives it a special appeal to people of means who seek the new and individual—yet its departures from conventional design are so logical and convincing that even the most conservative will be attracted by their manifest desirability and by the thorough quality of the car as a whole.

The new Pathfinder Seven-Passenger Touring Roadster as the most talked-of car in America, presents a new opportunity for capable dealers to enter successfully into a field hitherto closed to them.

Though the Pathfinder is now represented in a majority of the large cities, we can take care of about fifty additional dealers and shall be glad to present the Pathfinder in detail to dealers where we are not now represented.

THE PATHFINDER COMPANY
INDIANAPOLIS, U. S. A.

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Simplified Driving means Simplified Selling

Simply say "Shift your gears from the steering wheel" to an automobile prospect and he is immediately interested. He wants to know how it's done—all about it. This great refinement in automobiles—the

C-H MAGNETIC Gear Shift

—lifts your car into a new sphere, and opens to you a new market; the demand of the type of prospect who heretofore has found the use of the gear shift lever irksome and pleasure-destroying.

When you tell this class of buyer that the car you have to offer will be safe for his wife, his son and daughter to drive, as well as himself, you sound for him the keynote of pleasure in automobile driving.

The experienced driver, also, knows that the gear shift will satisfy his pride in "quick getaway", permit him to be first to start when the traffic cop says, "Go!"

The buyer of today takes for granted, good looks, power, speed and comfort in a car Dealers handling cars equipped with the C-H Magnetic Gear Shift say it is often the deciding factor in closing a sale.



Let the Gear Shift help make sales for you. Ask the manufacturers of the cars you handle if their new models will have this equipment. For illustrated catalog write us today.

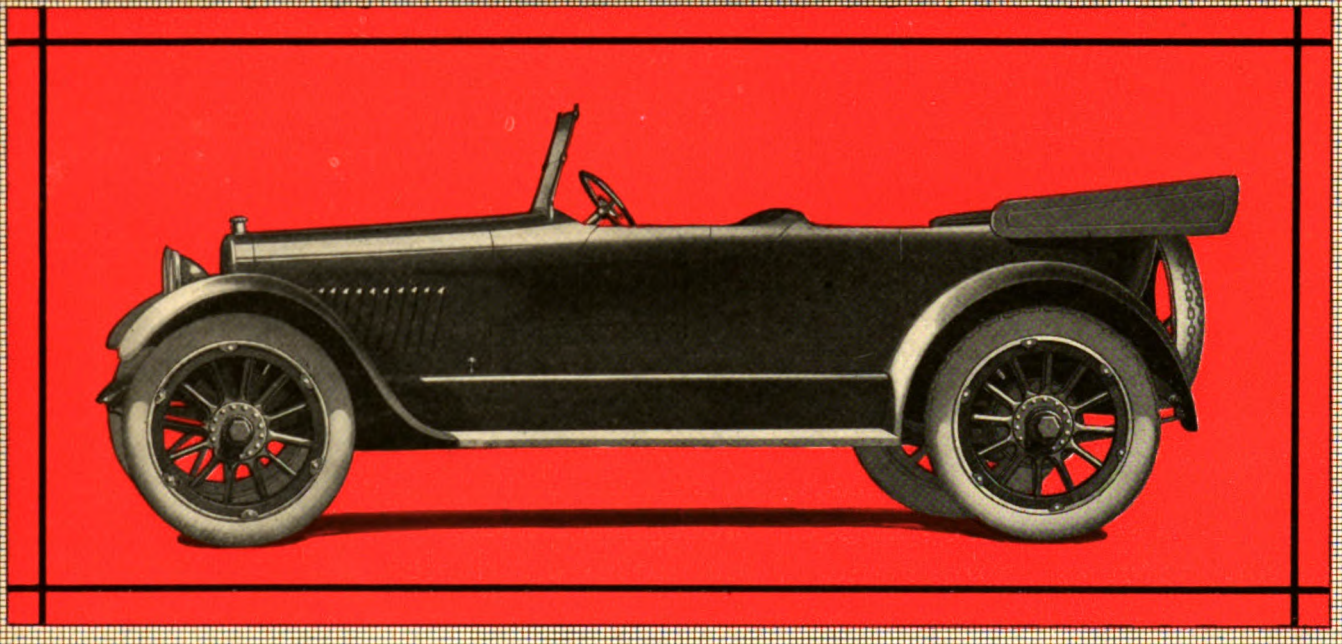
The Cutler-Hammer Mfg. Co. Milwaukee, Wis.

World's Largest Manufacturers of Electrical Controlling Apparatus

When writing advertisers please mention Motor World

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MONITOR



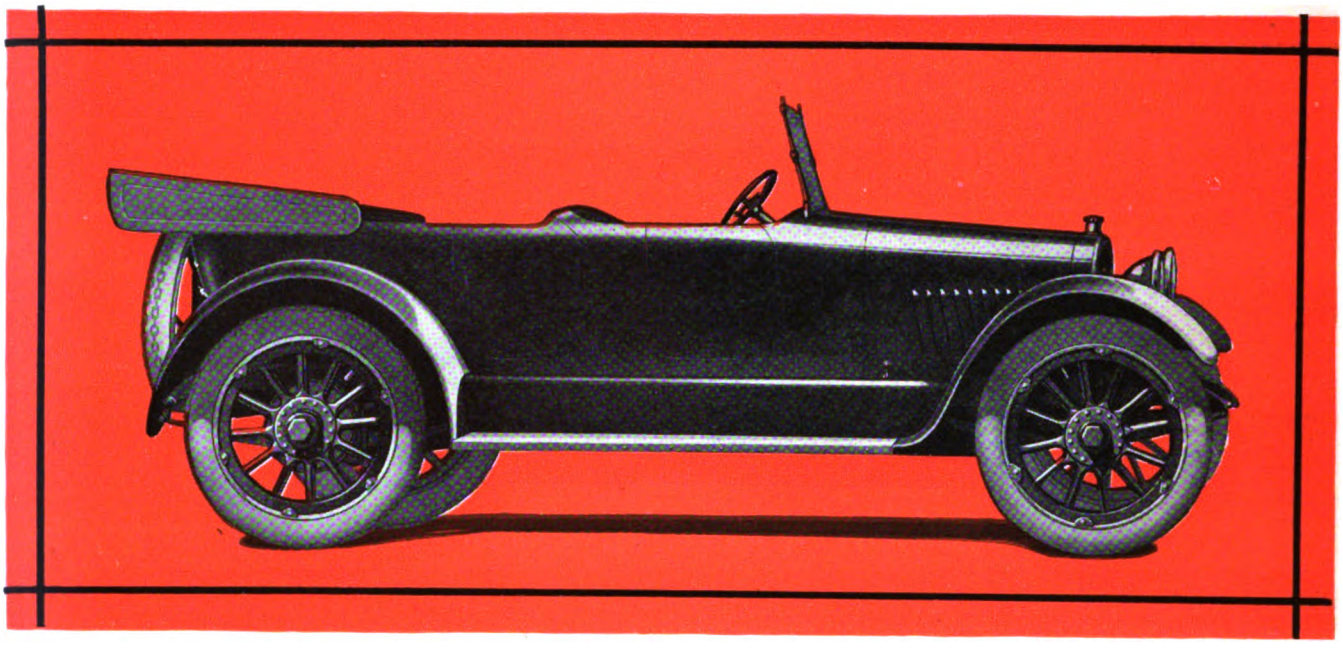
Monitor Six $1095

The Car you will want to Sell

When You See It at The Chicago Show

THE MONITOR MOTOR CAR CO.
MONITOR
COLUMBUS, OHIO

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MONITOR FOUR TOURING CAR $895

Monitor Value

IN Monitor Motor Cars we firmly believe that a new era of motor car value has been established. We firmly believe that in their construction every feature has been incorporated that provides greater value to the motor car owner and to the motor car dealer.

Monitor Cars are built as *you* would build a car if you were going to back it with *your* reputation — *your* money. Four years of experimentation and investigation are represented in their construction. Their performance has been proven in the hands of scores of owners.

For more than two years we have been building cars. Testing every improvement that has been offered. Selling a limited number where we could be in constant touch with their records of service.

Now — Monitor Cars — tried and proven — perfected and refined in every detail are being built in quantities that makes the agency for them the biggest opportunity in the industry today.

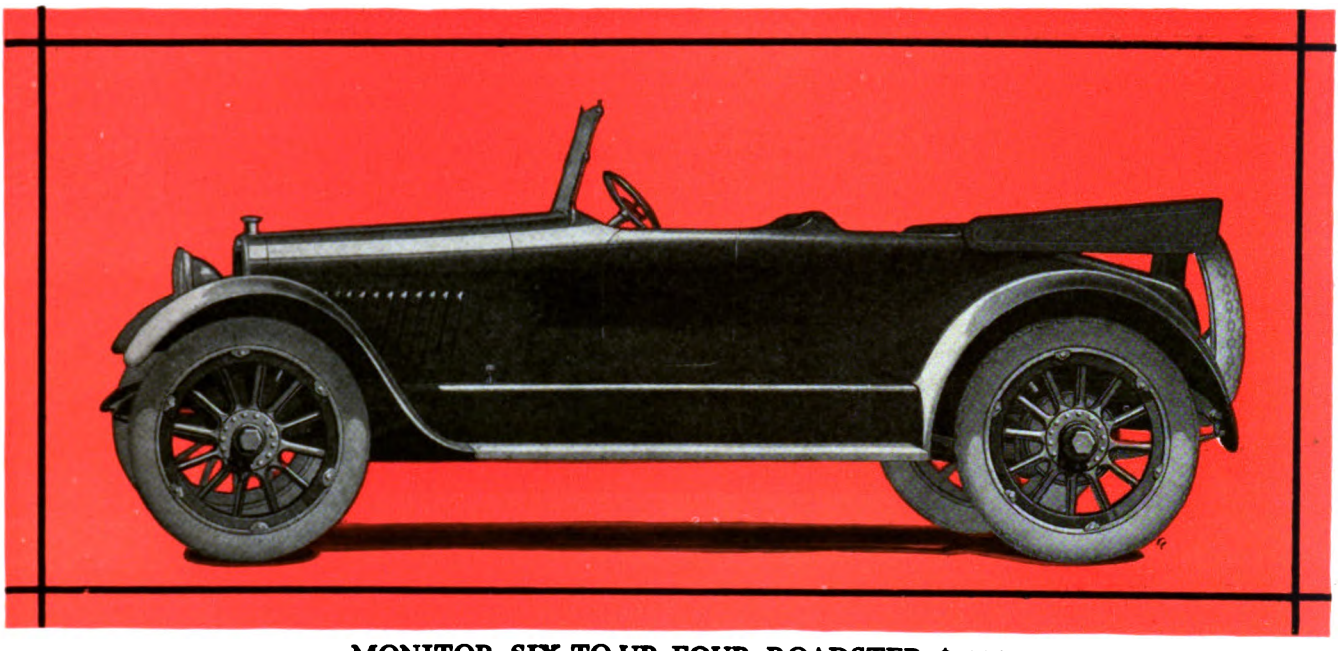
Monitor Resources

Back of the Monitor stands a company incorporated at one million dollars. Contracts have been made with the parts manufacturers and production is now under way in sufficient quantities to insure reasonably prompt delivery for a limited number of the best dealers.

The logical shipping point at which Monitor Cars are manufactured will be of interest to you. There is hardly a day in the year but what shipments can be made in automobile freight cars from Columbus without trouble. Contrasted with days and weeks of delay encountered from certain points this will be of decided advantage.

THE MONITOR MOTOR CAR CO. MONITOR COLUMBUS, OHIO

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MONITOR SIX TO UR-FOUR ROADSTER $1095

The Demand for the Monitor

FULL page advertisements in the Saturday Evening Post and other national publications reaching the motor car buyers will feature Monitor Cars from the next few months on. Trade Publications with big owner circulations will be used. And more than this, every Monitor Dealer receives local advertising support that is new—that is better than ever offered before.

But greater, perhaps, than this publicity as a business force, is the desire for ownership that the Monitor itself arouses in every community in which it is introduced.

Monitor Superiority is provable. It is an asset that Monitor Dealers find growing by leaps and bounds through no apparent effort on their part.

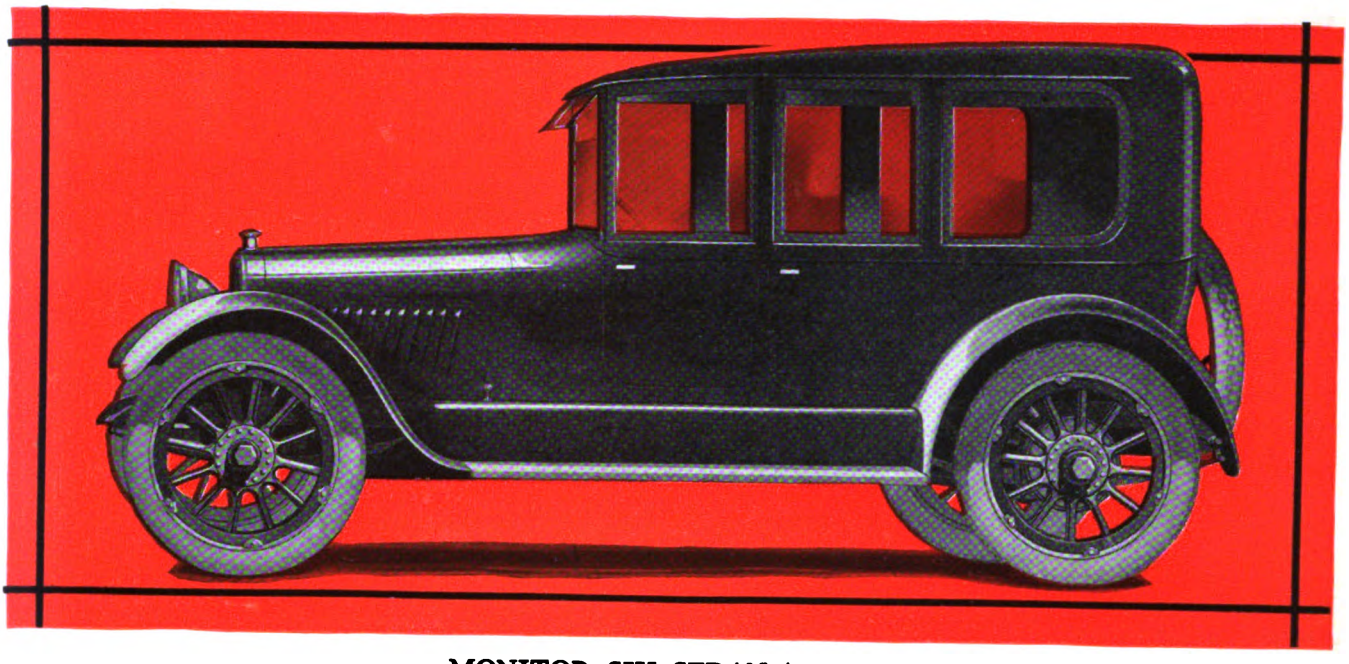
There is no car built, of similar specifications, that equals the Monitor record of low maintenance costs. And today the strongest point with a prospective owner is not so much what a car costs to buy, but what it costs to run.

For a month the owners of Monitor Fours in Columbus kept a record of gasoline mileage obtained.

Conditions of actual service show the merit of motor car design and under these conditions—driven by good, bad and indifferent drivers, the Monitor Four showed an average of better than 20 miles to the gallon. Every other maintenance cost on Monitor Motor Cars is equally small.

THE MONITOR MOTOR CAR CO. MONITOR COLUMBUS, OHIO

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MONITOR SIX SEDAN $1295

The Car You Will Want to Sell

WE can tell you here of the finished mechanical excellence of the Monitor Chassis. How we have included the same type Continental Motor that is used in cars selling from three to six hundred dollars higher. About the electrical equipment—the steering gear—rear axle—frame—and other features that you know from their use in cars of much higher prices than the Monitor. How every unit has been chosen because it represented the standard of highest value in the motor car world.

But we cannot convey by word or picture the wonderful sense of comfort or ease you experience when you sink into the softly upholstered cushions of any Monitor Model. How perfectly the Monitor springs check every shock before it is transmitted to the passengers.

We cannot show you the seemingly liquid transmission of the power in the Monitor Six that takes you from 2 to 62 miles an hour with no change of gear, and that, at highest speed is absolutely without vibration. And it is because we cannot show you these things—we say to you—WAIT TO SEE THIS CAR AT THE CHICAGO SHOW BEFORE YOU TAKE ON THE AGENCY FOR ANY CAR.

The number of dealers who can handle the Monitor this year is limited. We will only consider the exact number to whom we can guarantee delivery.

If you will write, wire, or call in person at the factory we will gladly tell you more about the Monitor—the policy back of it—how the representation of the Monitor will give you a growing—big-profit business that will be yours this year and all the years to follow—on a square deal basis. Prompt action is advisable. Deliveries are being made.

Monitor Four—Five-Passenger Touring Car	$ 895
Monitor Four—Tour-Four Roadster	895
Monitor Six—Five-Passenger Touring Car	1095
Monitor Six—Tour-Four Roadster	1095
Monitor Sedan	1295

THE MONITOR MOTOR CAR COMPANY, Columbus, O.

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Looking from the Inside—Out

There is no growth or advancement possible without an ideal or an aim, whether it be men or motor cars you are considering.

The men and the motor car are very intimately related.

Thus, the Grant Six reflects the ideals of the group of men who first conceived and brought into being the six cylinder car priced at less than a thousand dollars.

Three years ago the Grant Six was an unknown quantity —a daring idea—a SIX CYLINDER car at a price lower than many fours.

That the idea was sound, and that it was possible to build a SIX and a good SIX for a low price is attested by the success of the Grant Six and the quality of the Grant Six.

It is an interesting fact that the success of the Grant Six is founded on the determination of the group of experienced automobile men composing the Grant organization, to build success solely on the basis of giving EXTRA VALUE—as much automobile value as it was possible to give and still make a fair profit on the investment.

This ideal has continued to govern—and the same group of men are directing Grant Six manufacture and sales, thus, it is logical that the Grant Six of today is a much more beautiful car, more handsomely finished, with marked improvements in the nature of refinements at every point.

It sets the mark for automobile value below a thousand dollars.

The new Grant factory at Cleveland, rated a model of efficiency, with an annual capacity of 35,000 cars, makes possible a value without precedent in the automobile business.

The cars we are showing at Chicago will please you by their size, power, economy, strength and ability. We honestly feel that at no point have we any reason to offer apologies and that at every point we have reason to be proud of our product.

And this is the reason why Grant Six sales for 1917 exceed those of any previous year.

Grant success is drawing dealers like a magnet. It is helping Grant dealers everywhere—for there is no sounder foundation for a good motor car business than the principle of giving extra value in the car.

If you are interested in sharing Grant Success, see us at the Show, or, better still, write us today.

GRANT SIX

$825

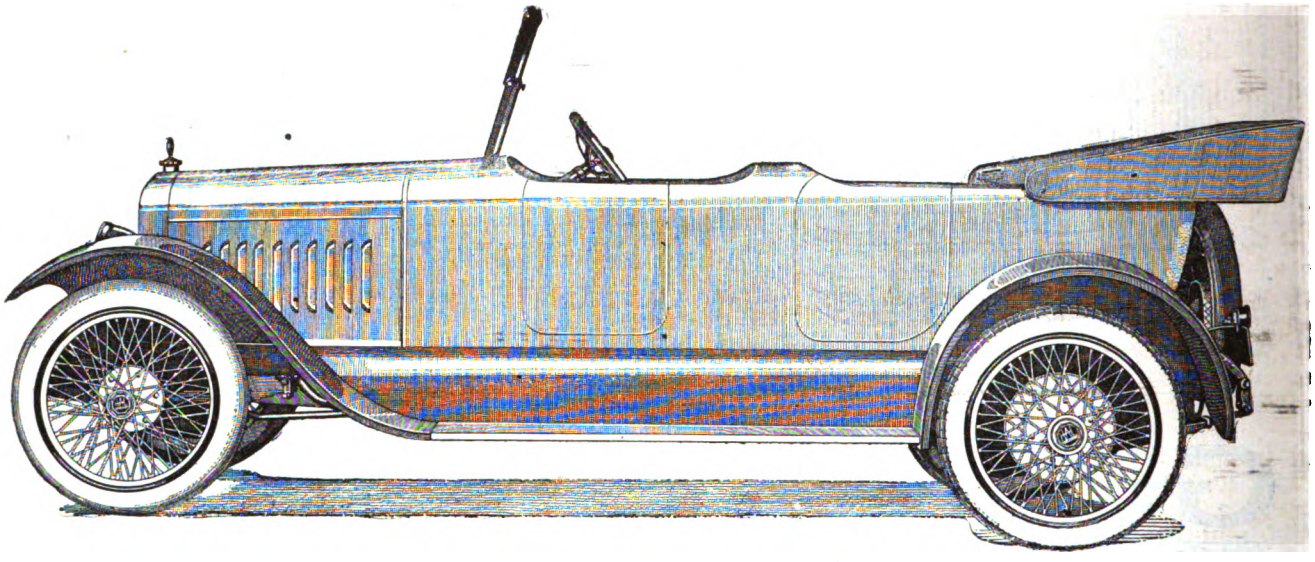
GRANT MOTOR CAR CORPORATION

Cleveland, Ohio

5 Passenger Touring Car or 3 Passenger Roadster	$825
5 Passenger Sedan (convertible top)	1000
3 Passenger Roadster (convertible top)	960

All Prices F.O.B. Factory

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The Hal Twelve

Something more than power; something more than smoothness; something more than economy—a combination of all. Such is the Hal valve-in-head twelve motor. It develops 87 horse power at 3000 revolutions per minute, is gentle and gives 10 to 13 miles to a gallon of fuel. Seven-Passenger Touring Car or Roadster, $2600. Limousine or Town Car, $4500, Leon Rubay Creations. Touring Sedan, $3500. Cleveland Prices.

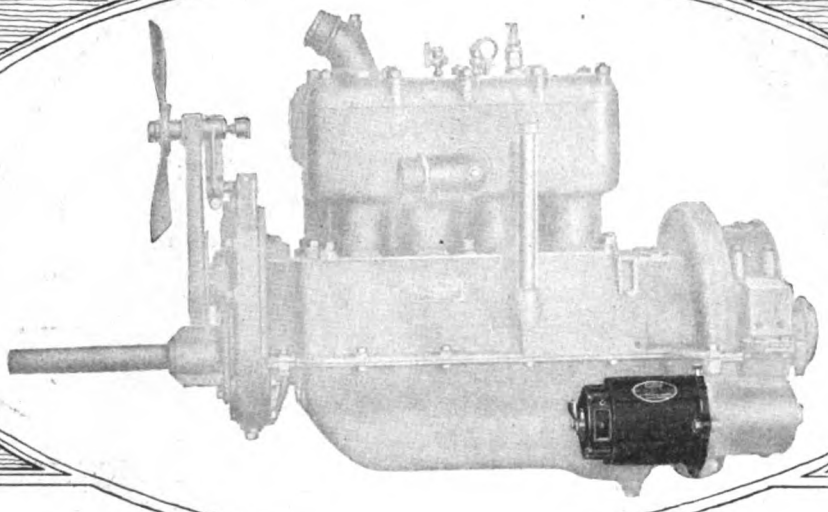
Hal Motor Car Company, Cleveland, Ohio

When writing advertisers please mention Motor World

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Showing Installation of the New Disco Two-Unit System on the Lycoming Motor

ELECTRIC DISCO SYSTEM

SERVICE

A New System

It is no coincidence that the announcements of our new unit system and our new factory are made in the same month. The two are inseparable parts in the New Disco policy of production and service—production of the very finest starting and lighting system made—service on deliveries that will be prompt and absolutely sure.

The *New* Disco two-unit system is superior to other types—because machining processes have been refined, manufacturing costs have been reduced and a tremendous gain has been made in accuracy and ease of replacement.

Take the field frame of the New Disco Generator. All the machining is done at one time and on the same chuck. Any machinist can easily see that by this method the outer rim and the circular recesses must be concentric with the bore; the ends absolutely perpendicular to the bore. It *cannot* be otherwise.

Our huge new factory—one of the largest in the world devoted to the production of starters—is to be fully equipped with special machinery to do this and many other improved processes for making the New Disco Systems. You will not find the like of this machinery except in some of the larger automobile plants.

A New Factory

Norma ball-bearings are used throughout the generator, and in the motor. The parts are far simpler and are fewer in number.

The generator has been run at 7500 R.P.M. for hours, yet has never shown a tendency to spark—good proof of the electric windings and assembly.

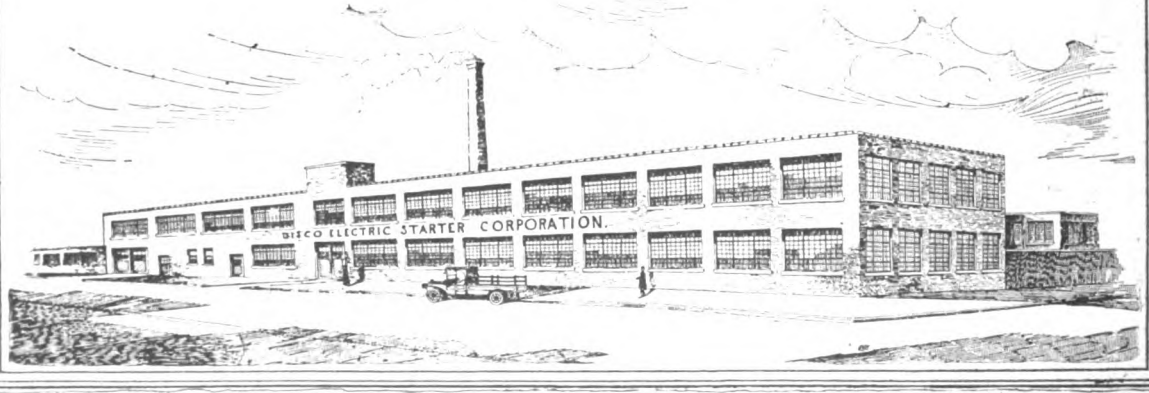
In numerous comparative tests the new Disco System has shown a lower break-away test than any other system ever made. The generator cuts in at from 6 to 10 miles per hour.

Casual inspection and cleaning is made easy by the two sliding covers at the end plates, and the entire mechanism can be disassembled by the removal of four thru-bolts.

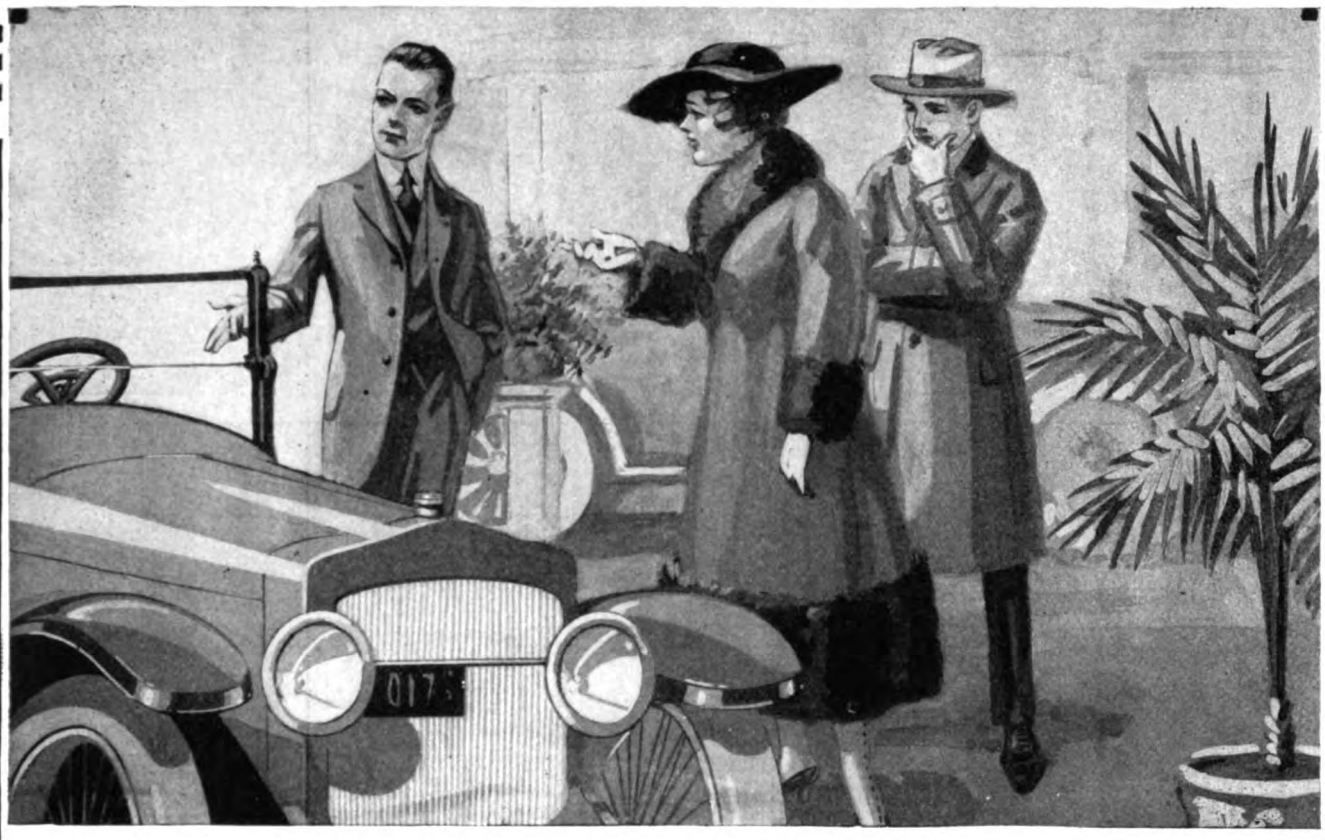
The new Disco system in the Ford type, complete with an ammeter and a lighting and starting switch (fastened to steering post and fitted with lock and key), costs $75.

DISCO ELECTRIC STARTER CORPORATION

Detroit, Michigan, U. S. A.



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The salesman is making a glowing presentation of the mechanical features of his car, covering the engine, the axles, the roominess, etc., when the prospect interrupts to say:

Very Good - but how about the upholstery - is it stuffed with WILSON'S (formerly Sulzbergers) CURLED HAIR?

Car buyers know that comfort depends upon the **quality** of the **cushions.** If the upholstery is hard, flat or lumpy, the car is unsatisfactory, regardless of shock-absorbers.

Do not be misled by recommendations of special metal spring construction designed to eliminate use of Curled Hair.

The upholstery is the point of contact between the passenger and the car.

Springs respond to shocks. Wilson's Curled Hair absorbs them.

Wilson's Curled Hair is so generally recognized that more than half of motordom rides on cushions stuffed with it.

Manufacturers—Upholsterers

Send for a sample of Wilson's Sterilized Curled Hair. With it we will submit prices and full particulars.

41st Street and
Ashland Avenue
Chicago

WILSON & CO.

Successors to
Sulzberger & Sons Co.

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There is a big demand for the "Wolverine Eight."

See it at the Chicago Show and you will understand why. Get these facts

Jackson

The more you know about eights and the more you know about motor cars in general the quicker you will be to appreciate the points that are making the "Wolverine Eight" the most popular and quick-selling car ever built by the Jackson Automobile Company.

We invite your attention to two important factors in this success—the Ferro-Jackson motor and the pleasing variety of beautifully finished, well-built bodies offered in connection with the Wolverine eight chassis.

The Ferro-Jackson motor is creating an amazing interest in the Jackson car. It is the first American-designed V-type, eight-cylinder motor with enclosed overhead valves without cages.

It is the first eight as well as the first V-type motor to be cast with both cylinders and upper half of crankcase in one piece.

With a bore of 3 inches and a 3½-inch stroke it develops more power per cubic inch of piston displacement than any motor ever built up to the present time.

It is rated at 28 hp., and shows in excess of 50 hp. on block test at 2800 revolutions per minute.

It is economical to a surprising degree—shows an average of 17.7 miles to the gallon of gasoline on touring tests. Some owners report better than that.

And it is an exponent of the finest type of motor smoothness, flexibility, quick acceleration. It shows surprising freedom from vibration at all speeds.

You will find the body styles up to the minute. You must see them to really appreciate their extra quality.

Five-Passenger Touring Car, $1295. Four-Passenger Cruiser, including five wire wheels, $1395. Wood wheels $100 less. Two-Passenger Roadster, $1295. Five-Passenger Sedan (Demountable Top) including regular top, $1505. Seven-Passenger Jackson Springfield Sedan, $1995. All prices f.o.b. factory.

Dealers: The 15-year-old reputation of the Jackson Automobile Company for producing cars of strength, power, comfort and ease of riding is more than lived up to in this new model. Write and learn more of the sales opportunities offered you in the agency for this car.

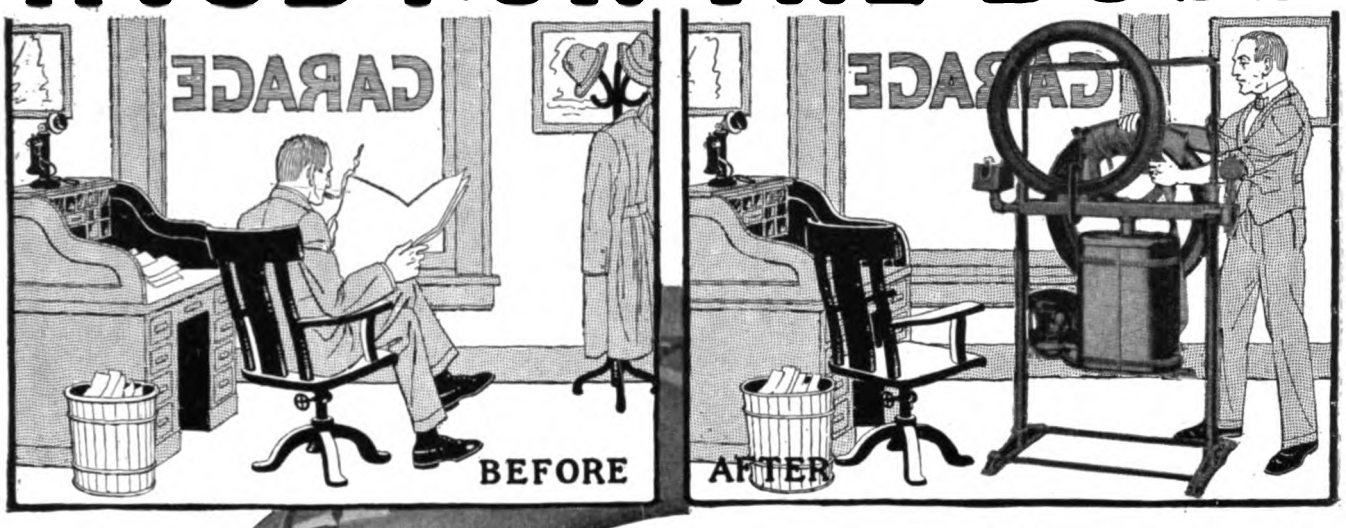
Jackson Automobile Company

East Main Street Jackson, Mich.



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A JOB FOR THE BOSS



Are you a garage man—operating the average garage—making a little money—not much—limited in your earning because you have to be presentably on the job yourself all the time, and yet the number of paying callers does not warrant this sacrifice of your time? If so, here is something new that you can set up right in your office—operate it in your spare moments—and make every moment earn big dividends. When a caller comes, he will not find you under the car, grease begrimed, and unfit to meet him—when the customer does not come, you are employed pleasantly—profitably—in other words, turning your idle time from a dead overhead loss to a profit—making your own time mighty profitable. The secret is—get one of

HAYWOOD'S Model D.B. VULCANIZING PLANTS

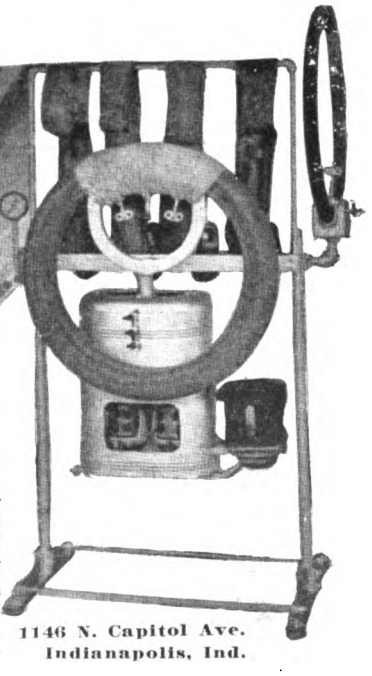
Every present customer is a prospect. 90 per cent of them prefer you. You have their cars when idle—you can make repairs for them without loss of time, and they are already dealing with you. They will appreciate your interest in them and tell their friends—your service will be improved—the big thing in holding customers.

A WONDERFUL MACHINE for all ordinary repairs to casings or inner tubes. It is easy to handle—quick—fast—sold at a price to be attractive to bicycle stations, automobile agencies, accessory stores, garages—earns a big profit from the start—takes up very little space—extremely simple to operate.

AT AN UNUSUAL PRICE—Only $45, complete with tools, for a machine that will earn its cost any week if you are of the right stuff. It's simplicity itself—any one can operate it without special training. Our splendid book of instructions makes it all perfectly clear. A little practice on an old casing or two, will quickly educate you. Or, if you prefer, come to our complete training school at the factory—the expense is very modest—but none of our customers have found this necessary on the new machines.

BIG PROFITS—The profits are truly unlimited—depending solely upon the amount of time you can give it. When we have sold a machine, our interest does not lag—we never forget—we keep coming to you with new ideas—new ways and means to enlarge your business—to get more money out of accessories—out of tires—the kind that give the owners the longest mileage—building you a business that is a real business

To a man of your ability, an investment of $45 is nothing, so do not hesitate—write today—find out all that we can do for you—make us demonstrate our proposition. When we have done so, put in one of our machines, and watch the money come in.



A BUSINESS OPPORTUNITY COUPON

Mr. M. Haywood, Personal.
1146 N. Capitol Ave., Indianapolis, Ind.

Dear Sir:—
Please send me full details how I may start a Haywood Sundry Supply Store and Tire Repair Shop in this locality.

Name .....

Address .....

Remember, we have done national advertising for six or seven years—used as high as 120 publications in one month—all to educate the public to *your* tire repair service. Fill out the coupon—let us send you all our information—you need it—you want it—whether you buy or not. Get the name of the nearest jobber—see the machine—let others tell you what it has done for them, and you will realize it is your BIG opportunity

HAYWOOD TIRE & EQUIPMENT CO. 1146 N. Capitol Ave. Indianapolis, Ind.

When writing advertisers please mention Motor World

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The Ford Chassis

in Full Dress

The Tourabout Model is a full five-passenger, four-door job with all the comfort details that you can ask for, and the entire equipment is complete in every way. The price less wheels is $260.00.

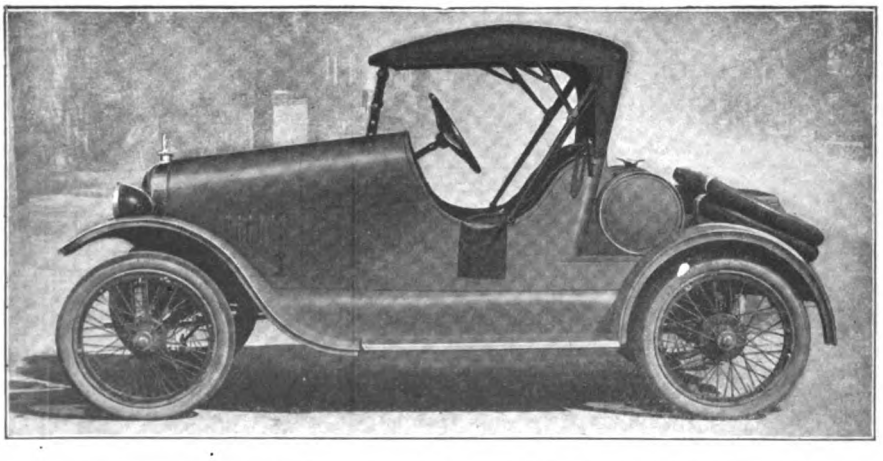
The Sport Model is just that—a racy roadster that is unusual in every respect and stylish to the last degree. It is most comfortable. The equipment is also complete in every way. The price less wheels is $195.00.

An Opportunity for Wide-Awake Dealers

Beau Brummel Body Outfits are sold wherever Ford cars are found. The field is large, the profits liberal and clean. There is no service to render. Each sale makes additional sales automatically and the orders are easily closed. We want representative dealers in every town. If you are progressive let us hear from you.

Our descriptive literature will be sent on request.

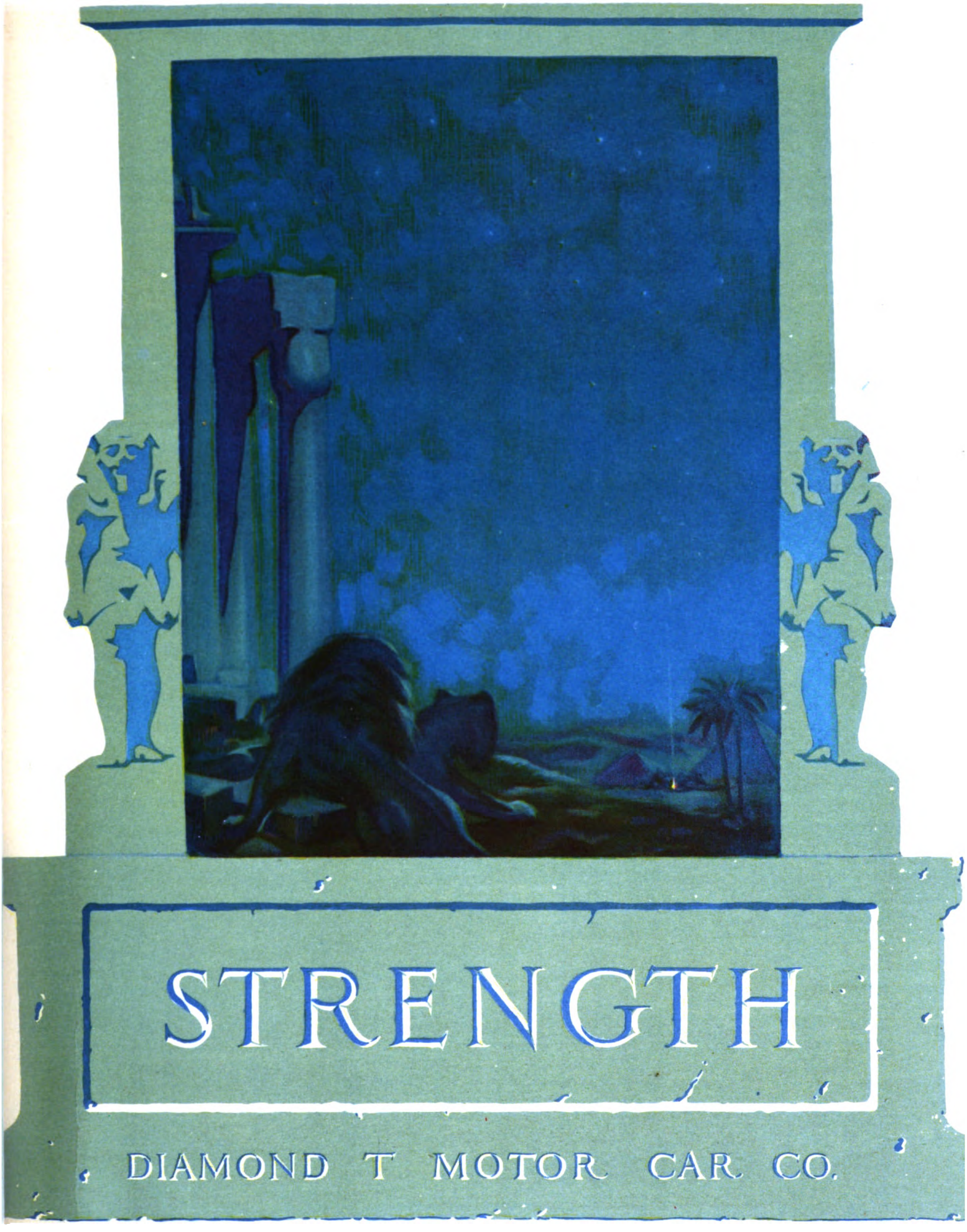
UNIVERSAL CAR EQUIPMENT CO.
1306 BELLEVUE AVENUE DETROIT



Illustrating the Sport Model with Tourabout Model above

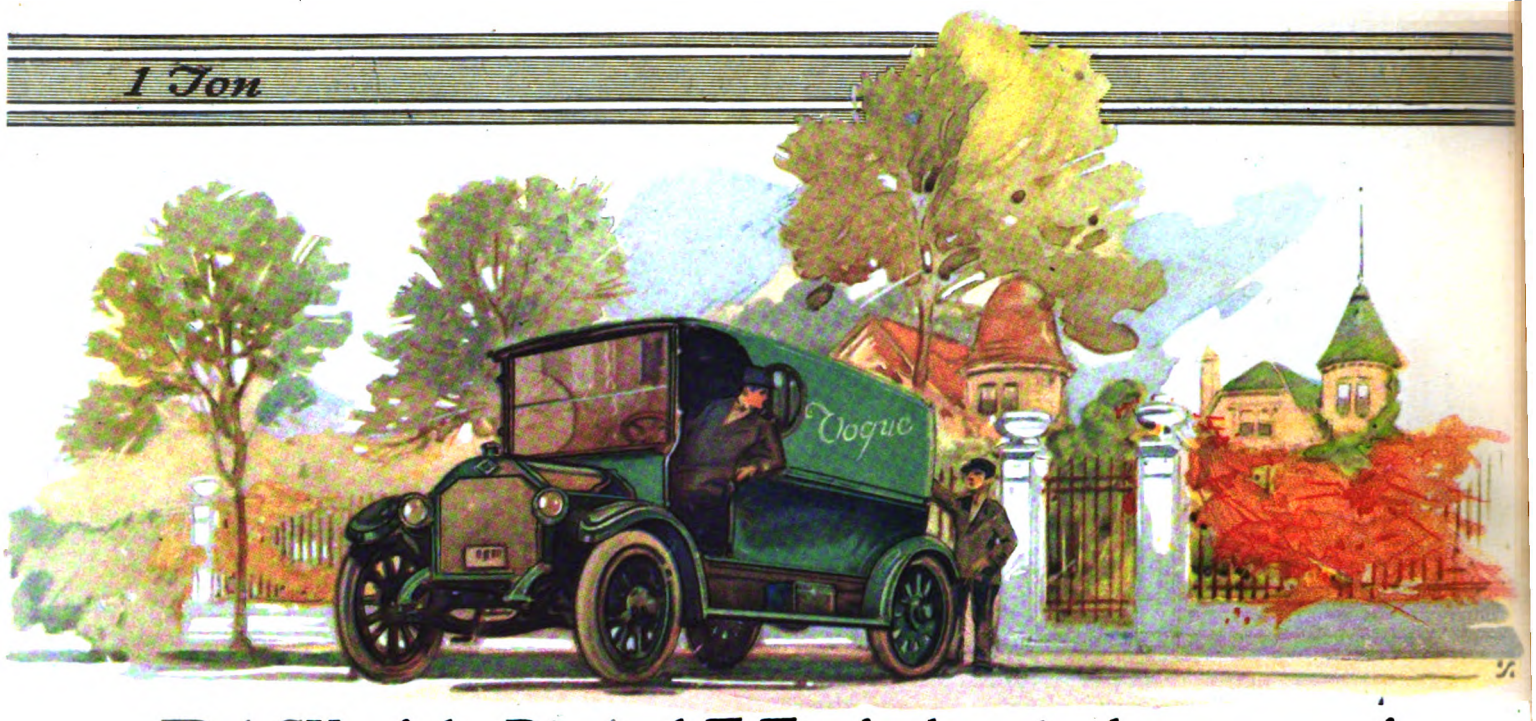
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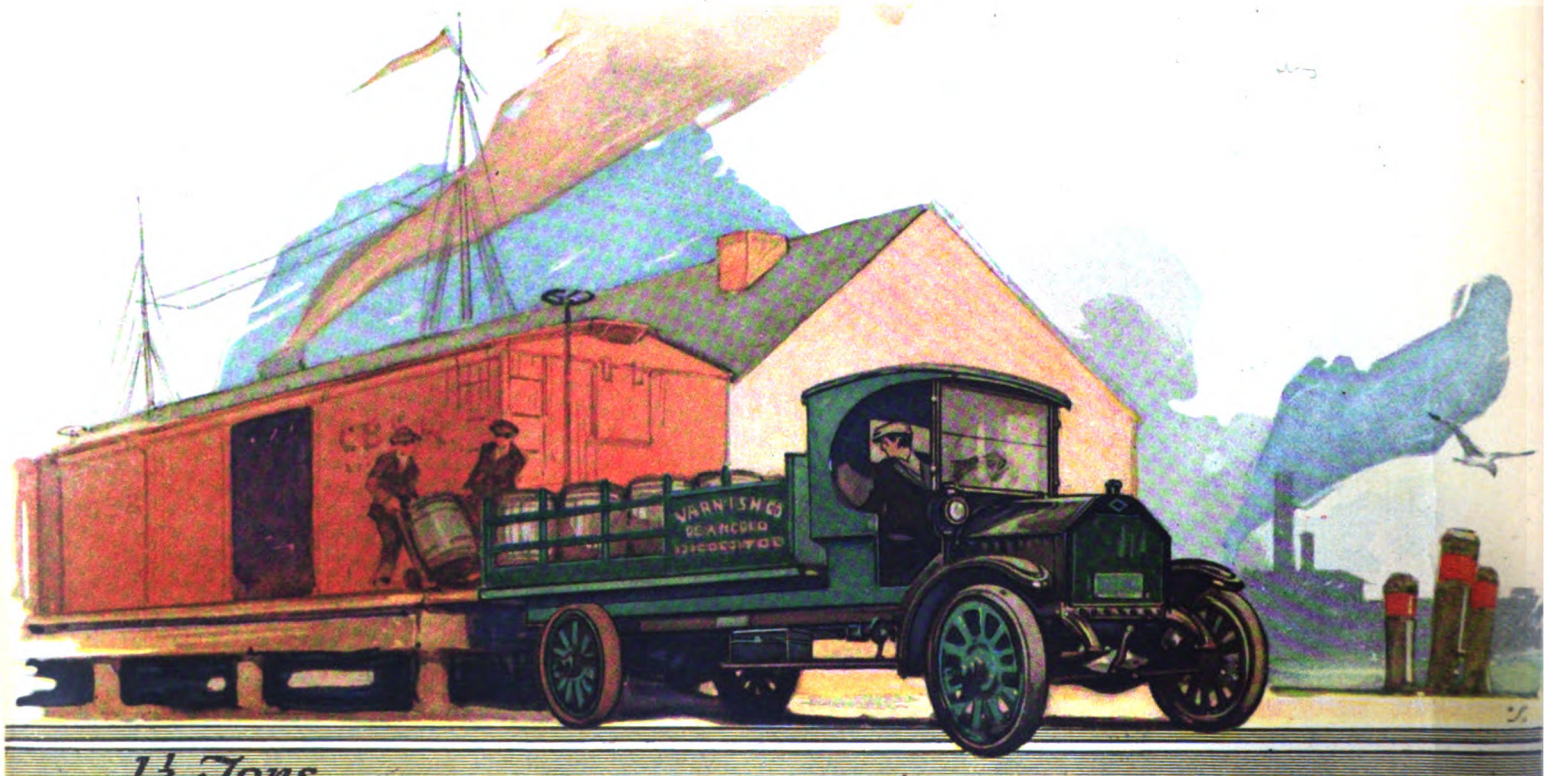
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1 Ton



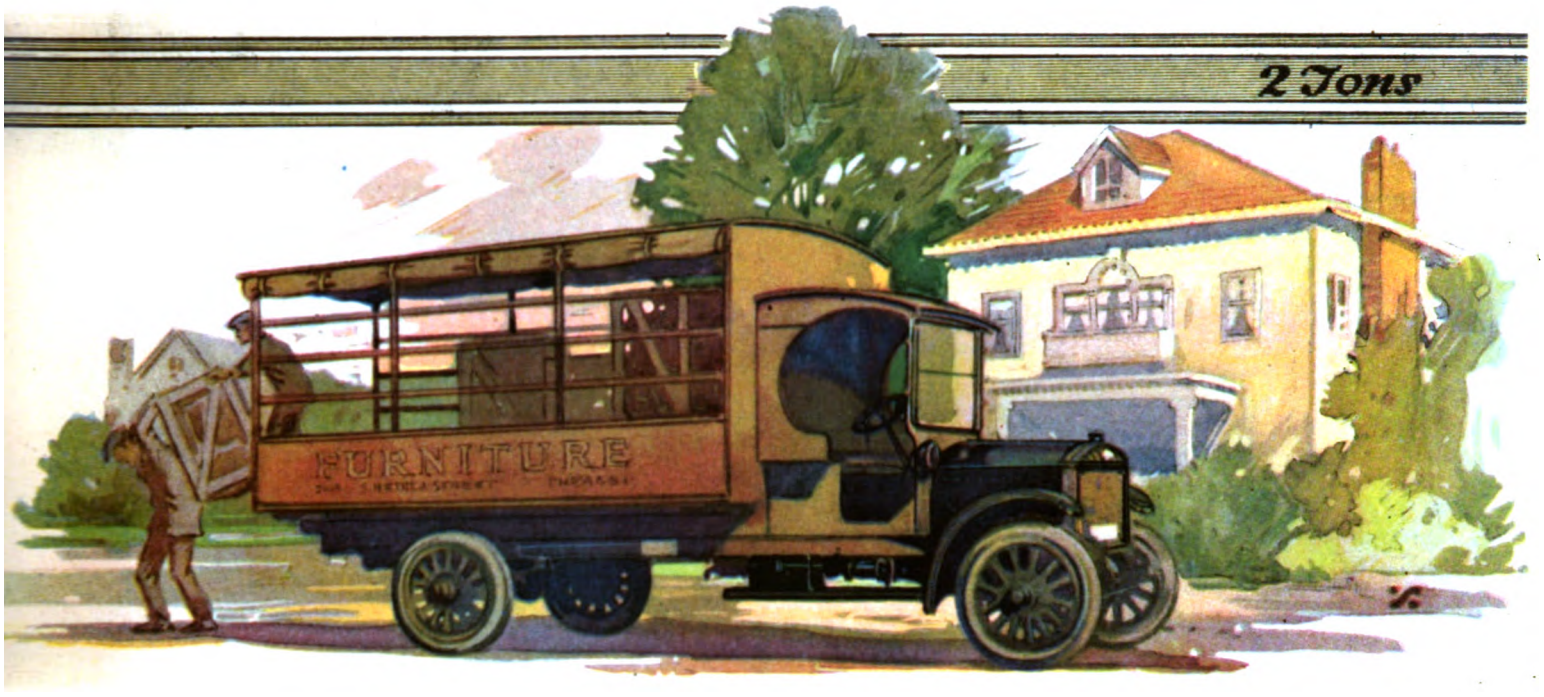
BACK of the Diamond T Truck there is eleven years of practical motor building experience, unquestioned engineering ability, rare judgment in the selection of men and materials and the high ideal to produce the best, most serviceable, most economical, most enduring truck in America.

Progress has marked every step in Diamond T development. The newest improvements---when found practical---have been incorporated; the best of everything is made a part of this simple, sturdy, efficient truck. The Diamond T organization sells trucks, keeps them sold, and reaps a reward in re-orders.



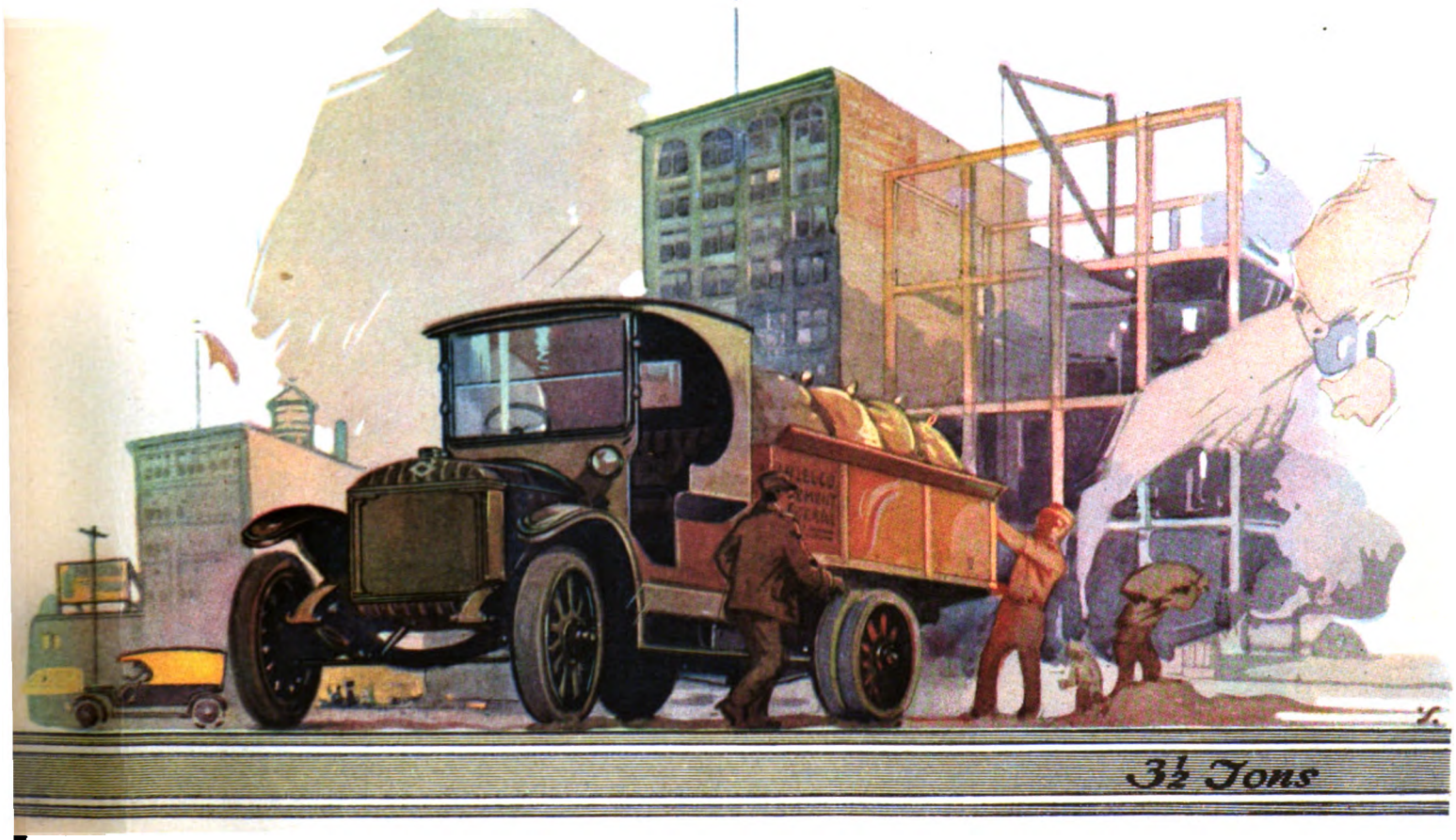
1½ Tons

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BUILDING slowly and surely---satisfied with nothing short of perfection, C. A. Tilt, for the past eleven years, has sought to produce a truck and an organization to sell trucks that would revolutionize present day trucking methods.

And now, with a product that admits no superiority, with a perfection of construction that will withstand the ravages of time and wear, even abuse, and sold by an organization thoroughly attuned to the Tilt standard, the Diamond T Truck emerges a definite factor in the Industry.



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THE Diamond T line now includes all capacity sizes necessary to the demands of Commercial Motor transportation. There is no man or concern, in need of motor delivery, that cannot find a Diamond T of the size and style to fill his needs.

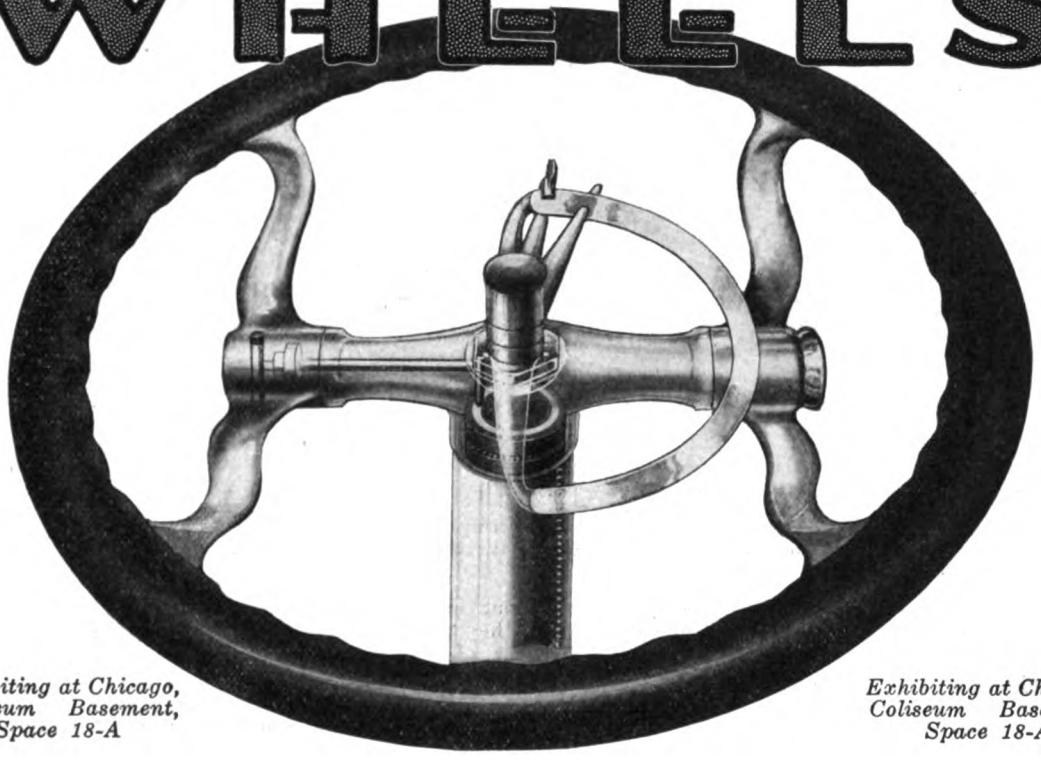
Progressive dealers who appreciate the future of the truck business and who have intentions of entering into this field with the seriousness it deserves should investigate the Diamond T line. It offers an unequalled opportunity.

Diamond T Motor Car Co.
Chicago, Ill., U. S. A.



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POVASCO STEERING WHEELS



Exhibiting at Chicago, Coliseum Basement, Space 18-A

Exhibiting at Chicago, Coliseum Basement, Space 18-A

The Ultimate in Steering Wheel Appearance, Durability and Usefulness

THE molded composition of POVASCO WHEELS gives an almost everlasting durability, and enables the owner to keep the wheel at a high, brilliant finish that is itself an asset to a car.

POVASCO UTILITY, however, is best represented by the hand-heating and tilting features, which are made in separate models or combined in POVASCO De Luxe, a phantom illustration of which we present above.

For the warm hand feature a connection is made by an armored cable running from the battery through a rubber bushing inserted in the outside casing of the steering post under the hood. It passes up the interior of the outside casing of the steering post, through a molded commutator connection which takes the place of the graphite bushing at the top of the steering post. The current is conducted to the steering wheel itself through brush connections which touch this commutator. These details can be perceived in the illustration. A touch of the push button turns the heat off or on.

The simplicity of the Tilting Feature is obvious. The knob at the right hand of the steering wheel spider is pulled out, the wheel tilted forward or back, as the need indicates, and parallel to the steering column. The knob is released, springs back and your wheel is locked in position.

Its design is simplicity itself, isn't it? And even the layman can see that its principle is as sound as it is simple.

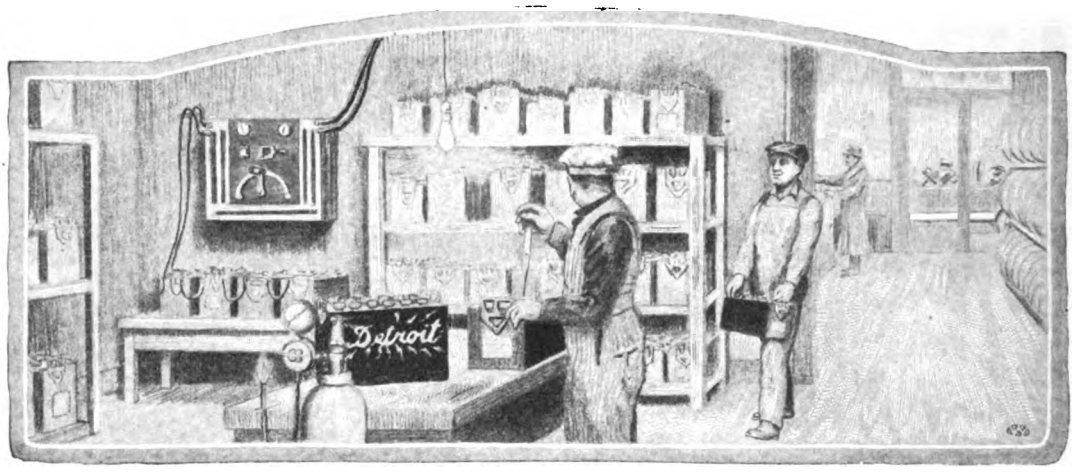
POVASCO WHEELS therefore present to alert, intelligent distributors an unexampled opportunity to get into a profitable, growing, REPEATING business with the investment of little capital.

Write for Beautiful Catalog Now—and ask for our Distributor's Proposition

POUVAILSMITH CORPORATION

POUGHKEEPSIE : : : : : NEW YORK

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About a Texan Who Found the Battery Business Profitable

Mr. E. N. Egge, Plainsview, Texas, is one of the hundreds of automobile and supply dealers throughout the country who have realized the tremendous future in the battery business.

Mr. Egge was no novice when it came to batteries, for during his experience in selling and repairing various makes of cars he had an opportunity to compare the different makes of batteries, and to find out the qualities which a satisfactory battery should have.

Many prospective battery-dealers, entering the business without sufficient experience, spend much valuable time and money in experimenting with different makes of batteries until they find one on which they can found a profitable business.

Mr. Egge did not have to go through this period of experimenting.

He knew how the Detroit Battery would perform in service as compared with others, so when he decided to enter the battery business he took on the Detroit line.

At the end of the first year he writes:

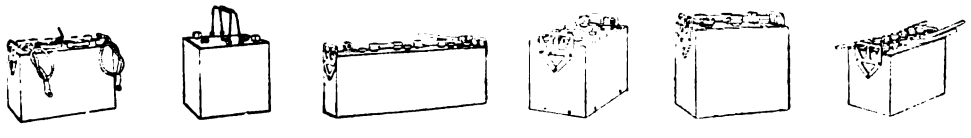
"We have had a very remarkable success with the battery business. We believe this is in a large measure due to the fact that the Detroit Battery always gives very satisfactory service, and that your shipments of batteries and repair parts have always been so very prompt."

Dealers

Why not consider the question of going into the battery business very seriously?

The business is just beginning to open up—every one admits that there is a greater future ahead than is any other branch of the accessory and supply business. This is just the right season of the year to begin—spring repairs and replacements will make a big profit certain from the start.

We will help you get business. We have prepared the most complete, most helpful plan ever devised by any battery maker for assisting our dealers. We will give you a course of instruction in battery repair work. We will show you how to run the business—how to advertise and get customers and how to take care of details such as accounting.

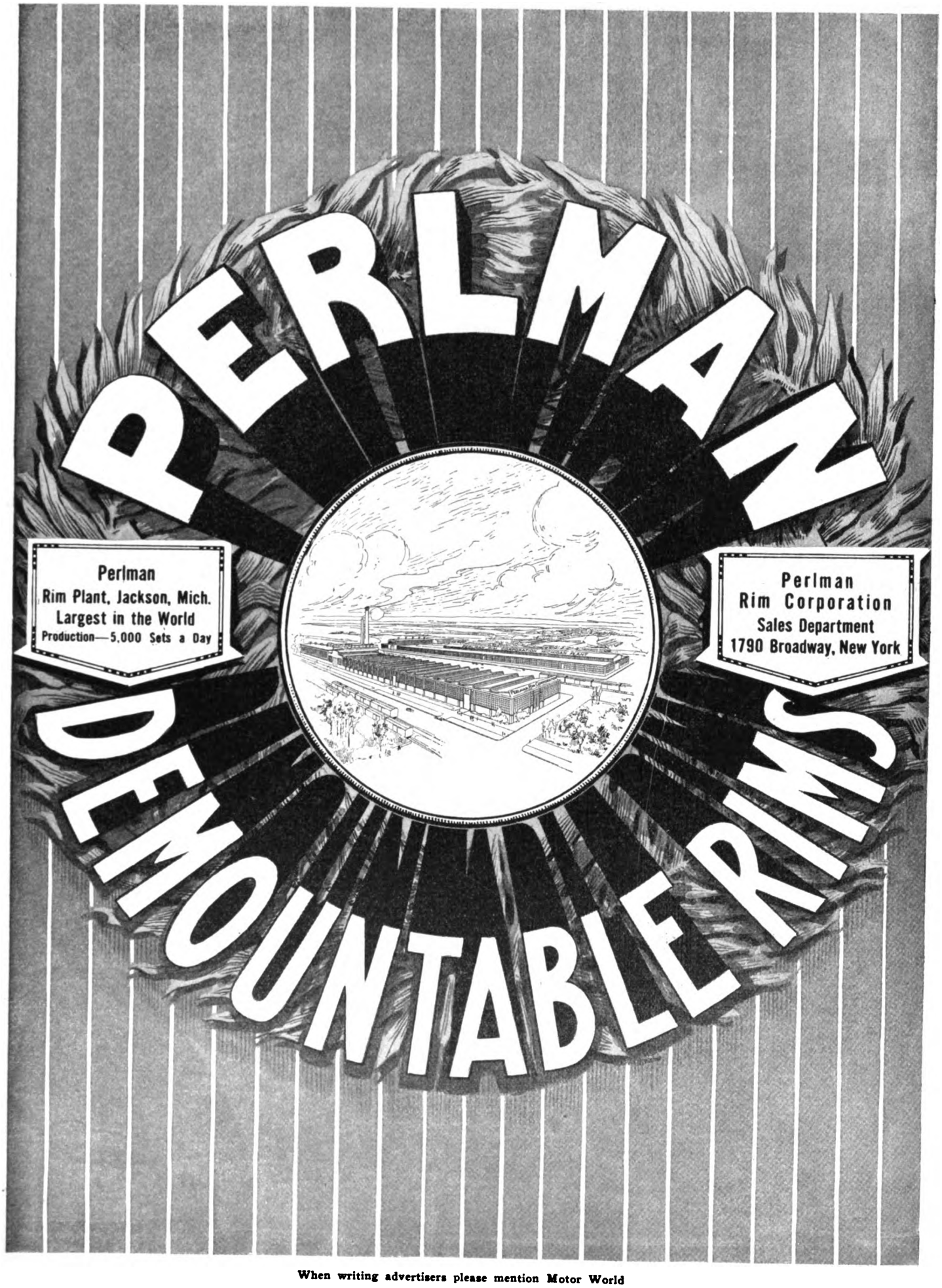


A Correct Type for Every Make and Model of Car

DETROIT BATTERY COMPANY

DETROIT

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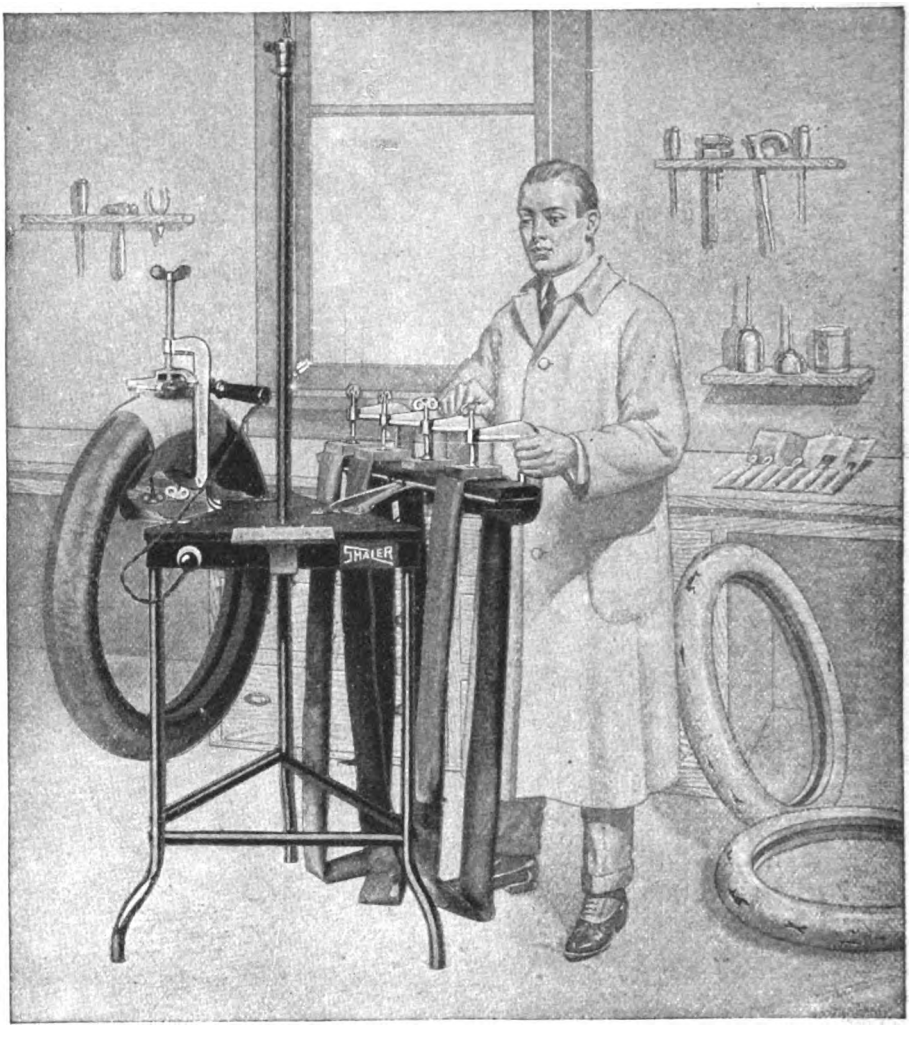
SHALER

Electric

Shop Vulcanizers

$60

Subject to Trade Discount



A Money Maker for Every Garage

Your garage, where every part of the automobile is repaired and cared for, is the logical place to mend tires. Thousands of ambitious garage owners realize it and are increasing their revenue as a result. They utilize the spare time of their help thereby reducing their overhead expense.

Every car you store, repair or adjust means eight prospective tire repair jobs because every car means eight tires per year on the average. These tires need daily attention because they blow out or puncture constantly.

Wrapped Tread Method

This simplifies tire repairing and makes every casing and tube repair perfect and permanent. It is the same method that is used and indorsed by the big tire makers. The Shaler is acknowledged to do better work than the high priced complicated machines.

It is so easy to repair tires the Shaler way that anybody who can clean or wash a car can operate a Shaler the first time and make perfect repairs. It heats from city electric light—uses very little current and requires little bench room.

Automatic Temperature Control

This, together with thermostat attachment, is an exclusive Shaler feature that controls and maintains the temperature of the Vulcanizer exactly at the right point for every type of repair without watching or regulating and without fear of overcuring or undercuring the tire.

Tubes can be repaired simultaneously with casings yet each unit is complete in itself and may be used independently. In casing repairs the Shaler retains the original pattern of any non-skid tread and makes the repair the strongest part of the tire.

Write Today for Complete Catalog

Send at once for the new Shaler Catalog of Shop Vulcanizers and investigate this extra avenue of profit for garages. You'll be surprised how easily and quickly you can add to your revenue. Steam heated vulcanizers furnished if you have no electric current. Mail your letter tonight.

C. A. SHALER CO., 449 Fourth St., Waupun, Wis.

The Largest Manufacturers of Vulcanizers in the World

Canadian Distributors: JOHN MILLEN & SON, Limited, Toronto, Winnipeg, Montreal, Vancouver.

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BOWER SAVES POWER

The Evolution of Automobile Bearings



The first bearings to be used in automobiles were those of the cup-and-cone ball type. Both vertical and end thrust capacity limited because of the stress being carried at the point of contact of two or three of the balls.



The straight roller bearings were the next step in advance, having greater vertical load capacity because of their line contact. No end-thrust capacity, unless additional thrust bearing used.



Next came the wedge-shaped or tapered bearing with certain advantages over both the ball type and the ordinary straight roller bearing. Greater vertical load capacity than the ball bearing, but smaller vertical load capacity than the straight bearing because stresses are not met at right angles. As both vertical load and end thrust are carried on one surface, the tapered bearing is more subject to wear and adjustment is often necessary.



Bower Roller Bearings are designed to meet at right angles every stress whether of vertical load or end thrust. The straight roller has a maximum of line contact which carries the vertical load, the end thrust being taken care of by the flanged head. Because of this division of work, the wear is reduced to the very minimum, and as the rollers are self-aligning Bower Bearings never need adjustment.

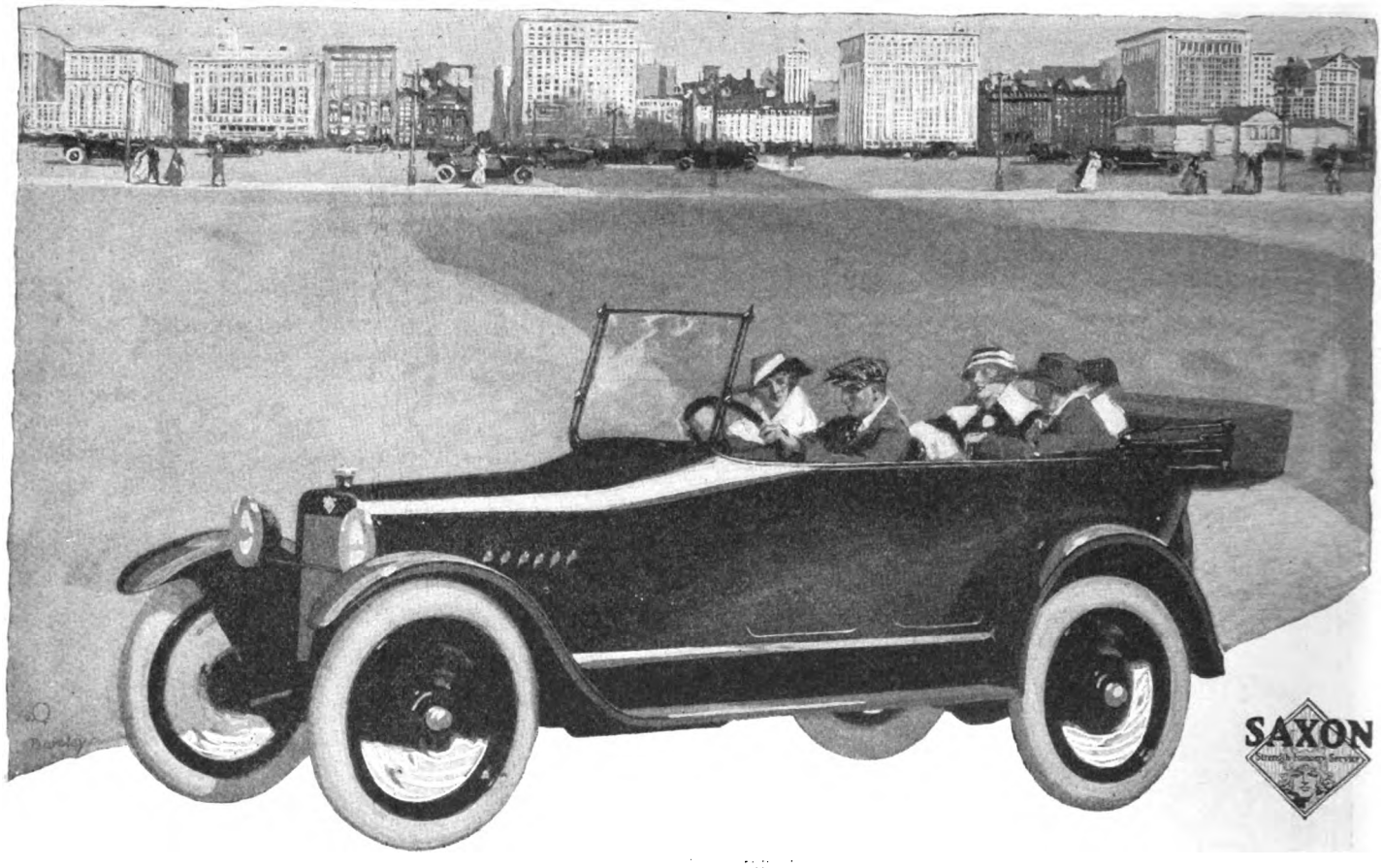
For the complete story in detail write for a copy of "The Evolution of a Bearing."

BOWER

ROLLER BEARING CO.

Detroit Michigan

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People Generally Are Convinced That Saxon "Six" Is the Best Car in Its Class

Nor is this belief in Saxon "Six" superiority confined to one part of the country. You'll find it equally as strong in the West as in the East, in the city as in the country.

But what are the specific reasons that have led motor car buyers the country over to this same clear-cut conclusion?

Perhaps the biggest single factor in Saxon "Six" success is the Saxon "Six" motor.

It is understood, of course, that uniform torque — smooth power-flow—is the standard sought by all motor car makers.

With a "less-than-six-cylinder" motor there are naturally intervals between impulses or explosions.

These spell vibration and consequent wear on the motor and parts.

With a six cylinder motor, however, one explosion merges smoothly into the next.

And this vibrationless power-flow gives rise to several important advantages.

It practically eliminates wear on the motor and parts, gives longer life to the motor, enables higher maximum speed and lower minimum speed, and produces nearly absolute operative quietness.

And best of all it adds perceptibly to the performance of the car.

Going from a stand to 45 miles per hour "the-less-than-six" required an average time of 30 seconds in six successive trials, Saxon "Six" required only 23 seconds.

In short, Saxon "Six" showed 22 per cent faster "pick-up."

Up a mile-long, winding hill—with a 15 to 18 per cent grade — the "less-than-six" mentioned before was timed at exactly 2 minutes. Once a gear-shift was compelled.

Saxon "Six" made the same hill in 1 minute and 2 seconds—without shifting gears.

SAXON "SIX"

A BIG TOURING CAR FOR FIVE PEOPLE

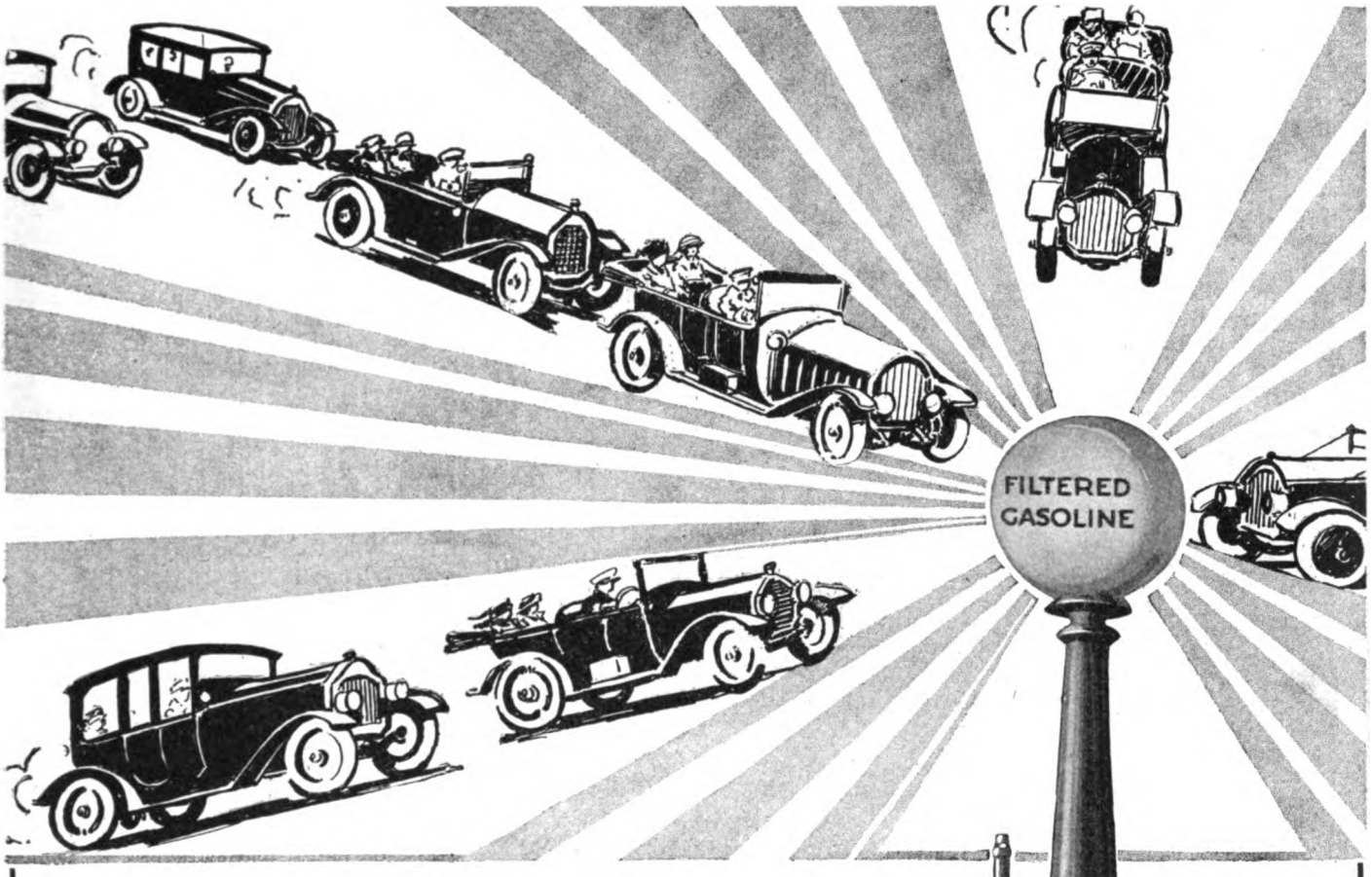
SAXON MOTOR CAR CORPORATION, DETROIT

Saxon "Six" is $865; "Six" Sedan, $1250; "Four" Roadster, $495; f.o.b. Detroit. Canadian prices: "Six" Touring Car, $1175; "Six" Sedan, $1675; "Four" Roadster, $665.

(800)

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THE MAGNET OF MOTORDOM

Do you give your gasoline customers the same quick, satisfactory, efficient service that your competitor gives his?

To hold your trade you must do so. To increase your trade you must give BETTER service. You can do neither unless you are EQUIPPED to do so.

This big, handsome WAYNE MONARCH—the magnet of motordom—at your curb will hold the trade you now enjoy and draw to your garage a full quota of the trade that now goes elsewhere, for there are thousands of motorists today who will buy "gas" from no other than

Wayne
Honest Measure Pumps



Wise dealers everywhere are rapidly installing these trade-holding, sales-increasing, profit-multiplying outfits. Here are a few of the reasons why—exclusive features of WAYNE PUMPS:

CONTINUOUS STROKE: The Wayne Monarch requires no backward cranking.

SPEED: The Wayne Monarch throws 5 gallons in 15 seconds.

DISCHARGE REGISTER: Big clock dial shows customer plainly the number of gallons discharged.

PERFECT METER: Positive drive, operated by cog rack, absolutely sure to record every drop of gasoline that passes through the pump.

HOUSING: Circular steel, unbreakable, weather-proof. Doors telescope; require no more room open than closed; are counter-balanced, automatically operate the handsome dome light.

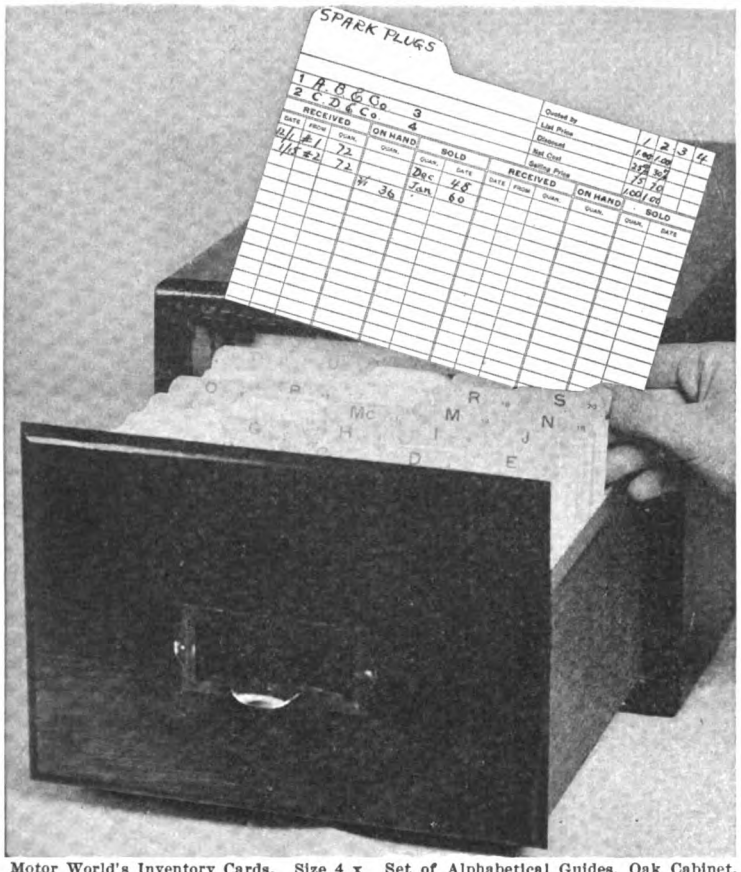
VALVES: All valves are made of solid brass and are cast according to a set formula, insuring permanency of quality.

CASTINGS: These are made from select gray iron and all of the castings which come in contact with the gasoline are galvanized. The suction and discharge pipes are galvanized steel, thus making a complete rust proof line for gasoline.

A post card addressed to us will bring you interesting descriptive literature and details. You'll find it worth your while to get them. Write now.

WAYNE OIL TANK & PUMP CO., 508 Canal St., Fort Wayne, Ind.

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Motor World's Inventory Cards. Size 4 x 6, $1.00 per 100; $9.00 per 1000. Size 5 x 8, $1.25 per 100; $12.00 per 1000. Outfit 46A, consisting of 500 Cards, 4 x 6. Set of Alphabetical Guides, Oak Cabinet, Complete, $8.75. Outfit 58A, consisting of 500 Cards, 5 x 8, Set of Alphabetical Guides, Oak Cabinet, Complete, $11.00.

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The Modern Motor Car

By H. P. MANLY

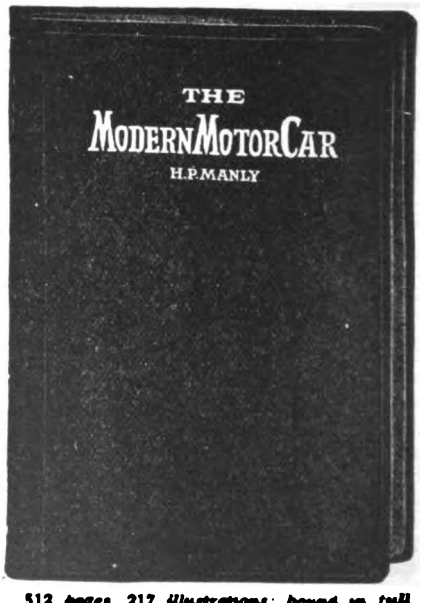
An Up-to-the-Minute Book on the Automobile

EVERY man who drives, owns, repairs or stores an automobile needs it. It is the most illuminating and instructive work of its kind that has so far been offered to the motoring public. It will serve the novice as an indispensable text book and the expert as a reference work of constant value.

It is a book that is most aptly named, for it treats exhaustively of the mechanics of the automobile right down to the eight-cylinder model. Its treatment is authoritative, too—the author immediately gives the impression of complete mastery of automobile design and construction—yet this hitherto complex subject is explained in the simplest terms and the most graphic English, that creates the right picture in the reader's mind even before the illustrations are consulted.

The electrical sections are particularly interesting and instructive. Beginning with an explanation of electricity as adapted to the motor car, the author carries his reader along rapidly and smoothly through its direct application to starting, lighting, ignition and control in a way that divests the subject of its mystery, and at the same time shows the vitally important part electricity has taken in the development of the automobile.

It is complete, authoritative, splendidly written, illustrated and printed; its physical appearance makes it worth a place in any library, and its contents have received the enthusiastic endorsement of some of the most enlightened writers on motoring topics.



512 pages, 217 illustrations; bound in full leather, flexible covers.

A Few of the Things for which Simple Directions are Given

Adjust any make or model of carbureter. Put electric machinery together right. Make a noisy engine run quietly. Trace wiring and locate breaks. Time poppet, sleeve or rotary valves. Locate grounded, short circuited or worn wires. Keep transmission from coming out of gear. Locate starting and lighting trouble by looking at the ammeter. Wire any make, type, age or model magneto. Clean a cooling system while on the car. Wire master vibrators. Scrape bearings. Time a magneto. Restore scratched cylinders. Adjust vibrators. Vulcanize tires. Stop water leaks. Regulate a cut-out. Charge batteries. Fit piston rings. Find the polarity of wires. Test engine oils. Make battery liquid.

Some New Ideas

Electric lighting and starting. Vacuum fuel feed. Rotary valve engines. 1915 magnetos. Electric brake. Carbureter heating. No history. No out-of-date work. No padding. Eight cylinder engines. Edison storage battery. Directions for oiling daily, weekly, semi-monthly and each 1,000 and 2,000 miles. Two-point ignition. Sleeve valve engines. 1915 carbureters. Electric gearshaft. Kerosene, alcohol and benzol fuels. Instructions in detail for 32 models of carbureters.

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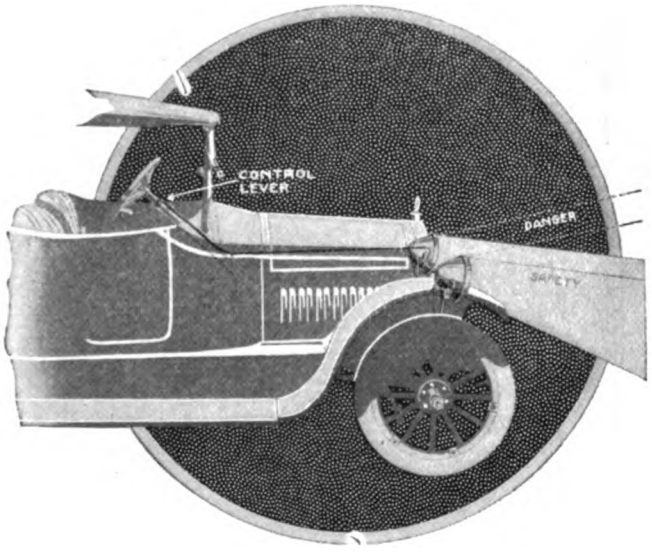
$2.50

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What Are the Auto Safety Lights?

Tilt Them Up or Down — *Control Them from the Driver's Seat*



THE Auto Safety Lights are merely your own automobile lights fitted to this especially designed device, which enables the lights to be shown ten feet in front of the car or a quarter mile down the road.

Your lights are always on at *full force* and are focussed below the eye level of pedestrians by the simple lever which is located on the steering post—Eliminates rigid lenses, dimmers and deformed reflectors—absolutely no springs, Direct Positive Movement.

Auto Safety Lights

For Country Roads or Crowded Traffic

"Legal Everywhere—Endorsed by City Officials"

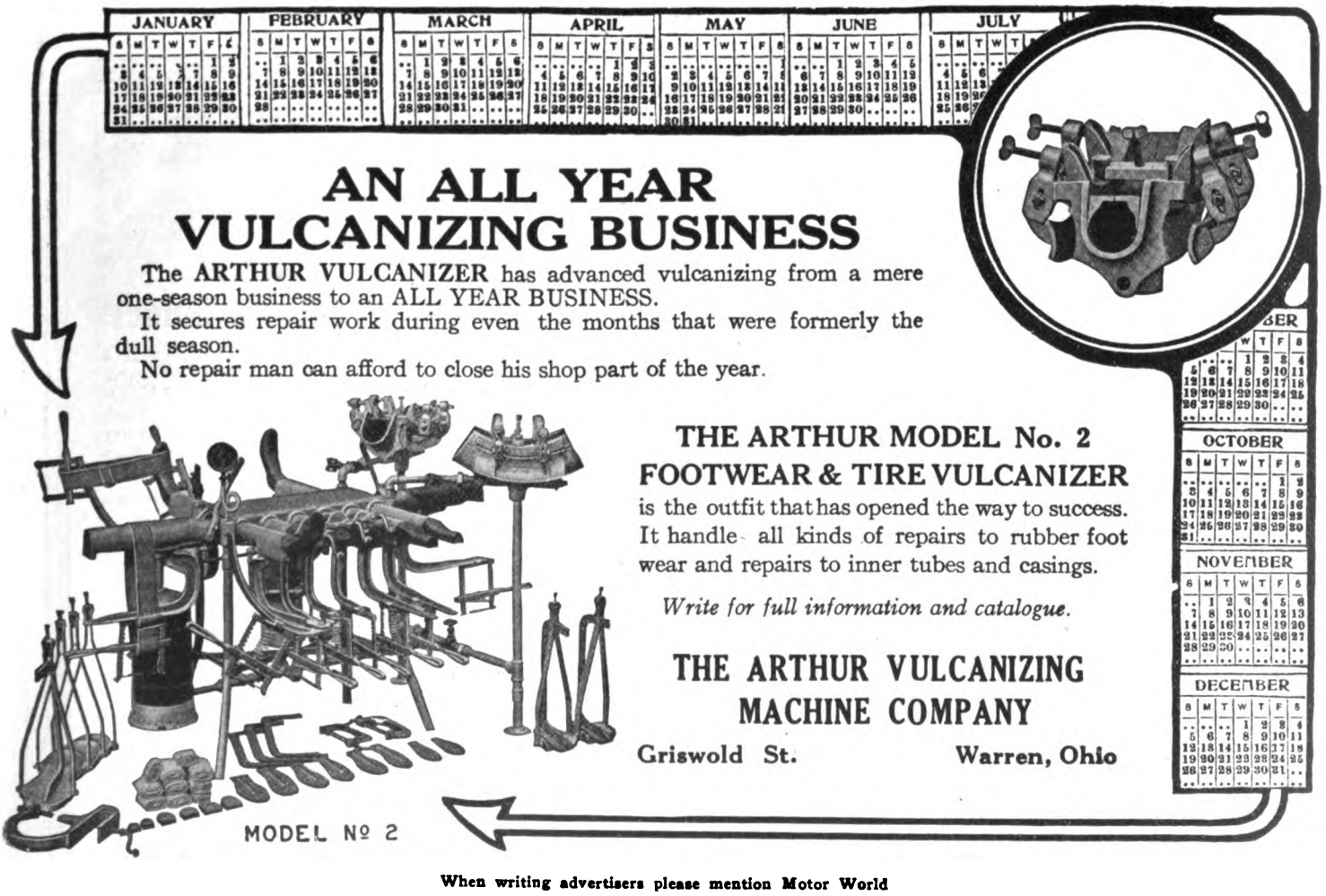
Easy to install—much easier to operate.

In their normal position the lights are "straight ahead" —by pushing the lever up or down, the lights are tilted as desired.

A Big Proposition for Dealers

Here is an unusual opportunity for dealers to make big profits. Write or wire today—and we will send complete dealer information.

THE AUTO SAFETY LIGHT CO., Dayton, Ohio, U.S.A.



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The Sign of Service

The A B C of Bearing Service

You can exchange your old, worn bearings for Ahlberg Reground Bearings, guaranteed to give entire satisfaction.

This Exchange Service of ours is simple as A B C. In each of our eleven branches we carry a complete stock of Ahlberg Reground Bearings. Here, on the instant, you secure just the bearings you need in exchange for the old ones you have. No waiting, no delay.

It is part of our service to furnish you not only a reground bearing equal to a new bearing, but to do so instantly.

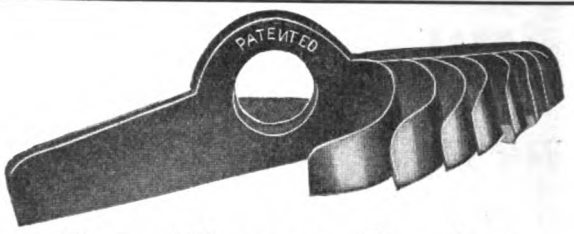
These satisfactory bearings and this service of instant exchange cost only a fraction of what a new bearing would.

Ask us to send you our free book on Reground Ball Bearings. Simply say "Send me Ahlbearfax No. 9."

Get in touch with our branch nearest you, where expert men, with complete stocks, await the opportunity to serve you.

St. Louis, 2831 Locust St.
Minneapolis, 926 Marquette Ave.
Cleveland, 1836 Euclid Ave.
Atlanta, 323 Peachtree St.
Portland, 325 Davis St.
Los Angeles, 325 W. Pico St.
San Francisco, 715 Turk St.
Detroit, 790 Woodward Ave.
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Ahlberg Bearing Company
2636 Michigan Avenue, Chicago, Illinois



Save Time on Bearing Adjustments

If there are Laminated Shims in the crankshaft and connecting rod bearings of the car you are overhauling, you will find it takes less than half the time you otherwise take to adjust bearings.

LAMINUM

The MATERIAL for SHIMS

Laminum is a one-piece shimming material made up of thin leaves of hard brass held in a compact mass by a metallic binder. When you adjust bearings all you have to do is to raise a corner of the top leaf with a knife and peel it off. The size of the shim is reduced a definite amount (.002" or .003") for each leaf removed.

In Laminum you get the good points of both solid and loose leaf bearings with the defects of neither.

We have stock shims for Ford engines.

Write your jobber for prices.

LAMINATED SHIM COMPANY

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Detroit, 2113 Dime Bank Bldg.
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SOLDER

(ready to use)



Kester Crystal-Core Solder

is a seamless tube of wire solder. The core is a soldering flux that flows as solder is used. CRYSTAL-CORE is especially adapted for AUTOMOBILE work. Tube is a series of cells. Each cell is filled with the proper amount of flux. Kester Crystal-Core Wire Solder is cheaper to use than solid wire or bar solder. No time is lost in preparing or applying the flux or acid.

Cleaner, Neater, Quicker Results

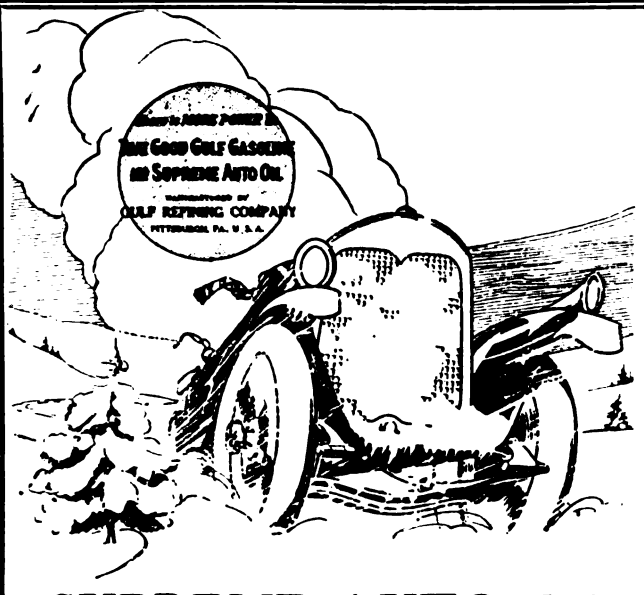
Use it for battery terminals, gasoline pipe and tank joints, electric light connections, radiator leaks, cracked fenders, speedometer flexible shaft, spark plug terminals and general garage use. Sold in coils of 1 pound, and on spools of 1, 5 or 10 pounds.



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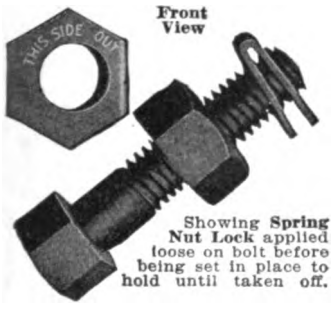
SUPREME AUTO OIL

Starts with the Engine

This is most important during the winter months. You should know whether the oil you are using "flows freely at zero." All oils do not possess this feature—notably the paraffine-base oils, which thicken up under cold and often cause great damage to the motor.

The safe way is to ask for SUPREME AUTO OIL—it **"Flows Freely at Zero"** and leaves less carbon, owing to the fact that it is a Southern Asphalt-base oil containing no paraffine to gum, stick or thicken.

GULF REFINING COMPANY
PITTSBURGH, PA.
The Largest Independent Refining Company in the World



Showing **Spring Nut Lock** applied loose on bolt before being set in place to hold until taken off.

Why Not Be Sure

that every part of the engine; chassis, or body of the car you make will **stay together** until taken apart?

Spring Nut Locks

are the simplest, surest, safest device to positively lock any nut on any bolt. Resists all vibrations. Cannot harm threads. Easily applied. Released whenever desired.

Cheapest and Best

Manufacturers, Jobbers, Garage Men, Repair Men and **all Dealers** should **write** for prices on sizes now available. Orders filled in rotation. All sizes by January 1st.

Spring Nut Lock Co.
648 Transportation Building
Chicago



Spring Nut Lock tightened against Nut. Prevents Nut being shaken off and follows Nut tightening against material.

We have ceased to boast about casings that go 8,000 or even 12,000 miles. Really, that is a commonplace performance for

Kelly-Springfield Tires

We blush for the occasional tire which fails to deliver to its owner the guaranteed mileage, but when that happens—which is seldom—we make the adjustment promptly and pleasantly.

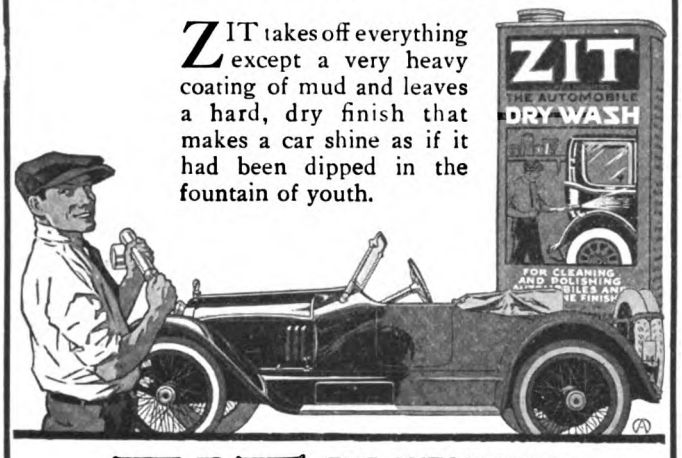
Kelly-Springfield Tire Co.
Executive Offices
Broadway at 57th Street
New York
General Sales Department
1900 Euclid Avenue
Cleveland, O.



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Clean Up on Sales of This Liquid Sunlight

ZIT takes off everything except a very heavy coating of mud and leaves a hard, dry finish that makes a car shine as if it had been dipped in the fountain of youth.



ZIT THE AUTOMOBILE DRY WASH

has made good wherever tried. It won't freeze, evaporate or burn. Restores the elasticity and keeps the finish from checking and cracking. Good for furniture as well as cars.

If you want a sure seller, stock ZIT. Dealers who have never tried it *should*. Write today for further information.

Westfield Chemical Company
50 Main Street, Westfield, Mass.



NONSET Piston Rings

—never lose their "spring." A tough skin or crust is allowed to remain on their inner surface when they are cast, giving them a *permanent* resilience. *They cannot leak*, and the velvety smoothness of their outer surface insures your cylinders against scoring.

A Splendid Dealer Proposition — Ask Your Jobber.

STEVENS & CO.
375 Broadway New York City

STEVENS NEW YORK



Mosler VESUVIUS Plug

PRICE $1.00 AT ALL DEALERS
Stone Insulator.
Absolutely gas-tight.
Has no equal for Speed and Power.
Sizes and threads for all motors.
New schedule of trade prices.

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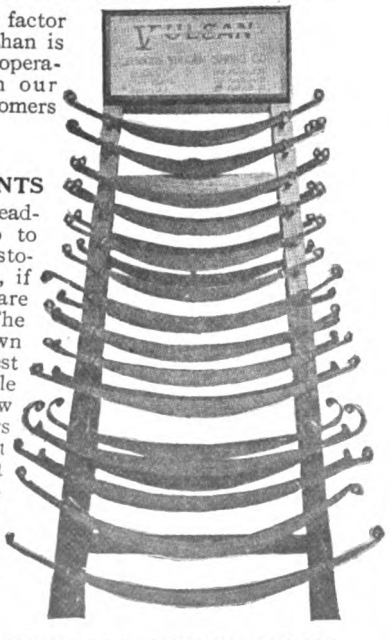
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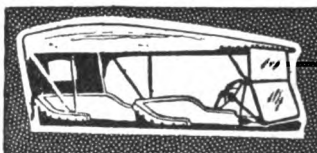
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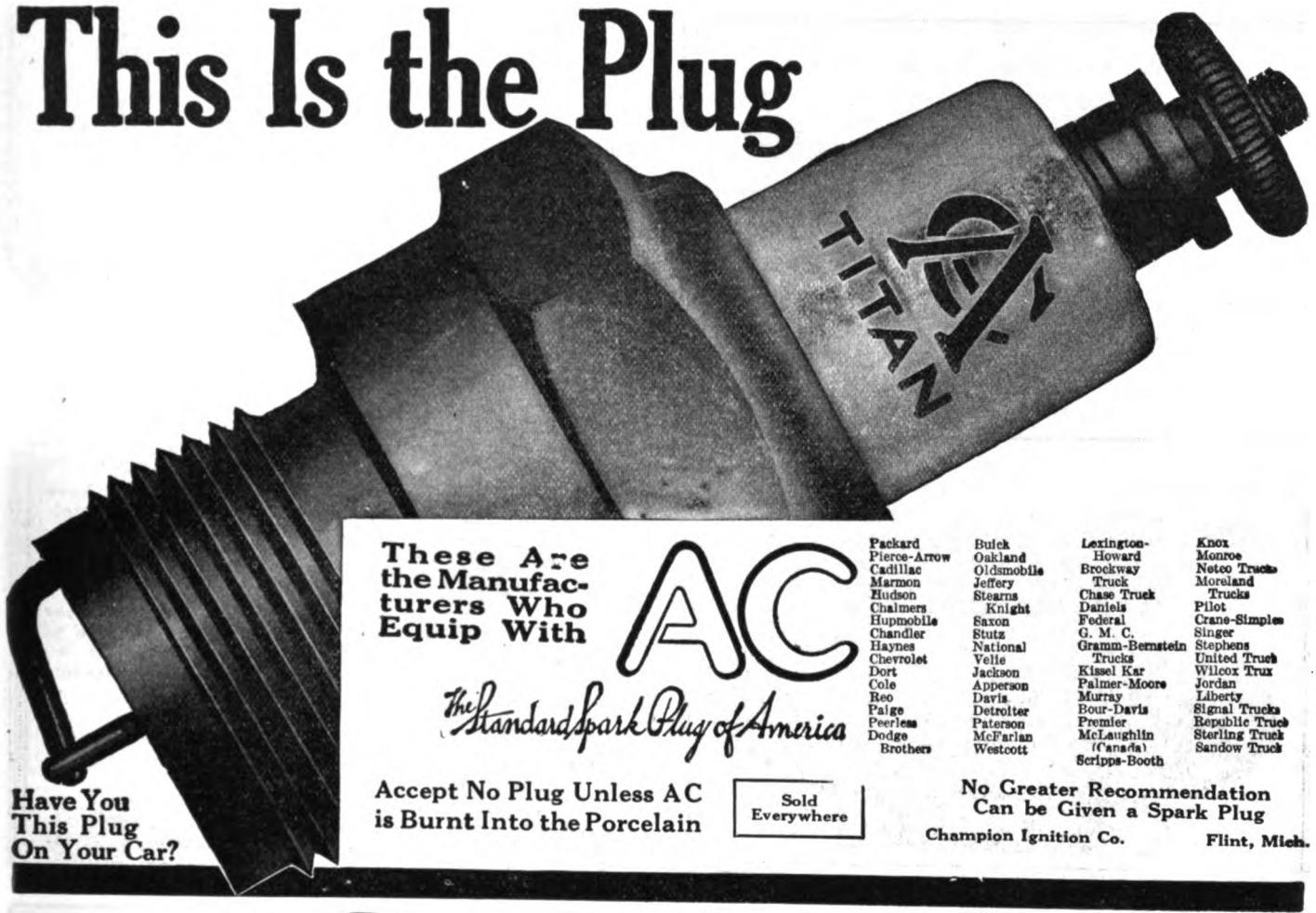
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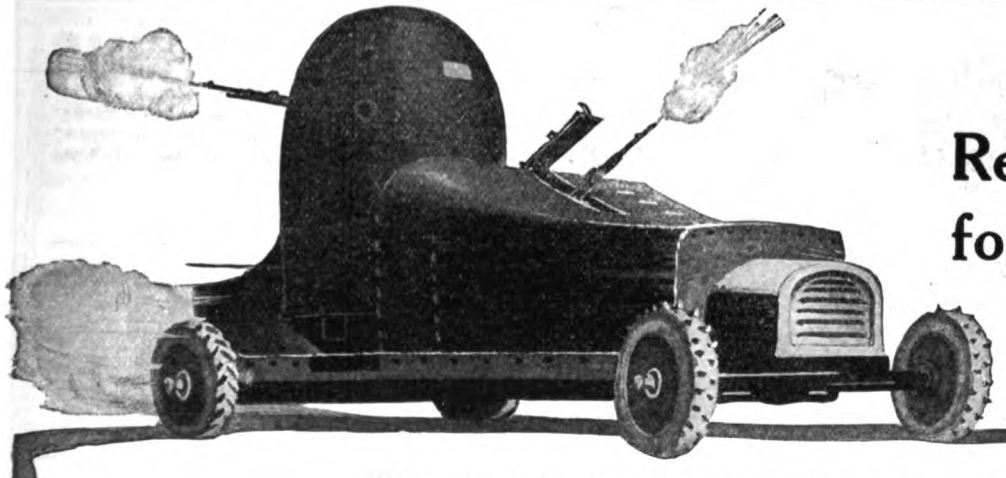
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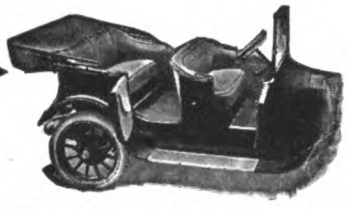
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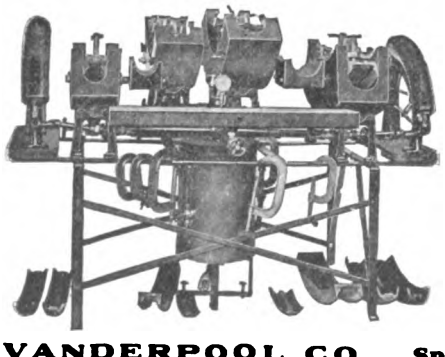
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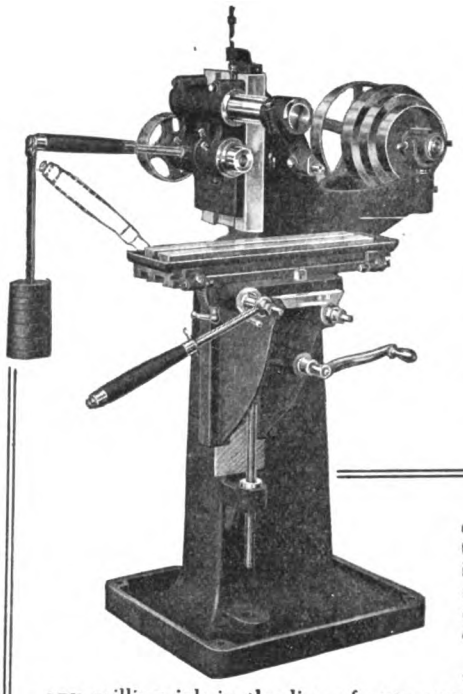
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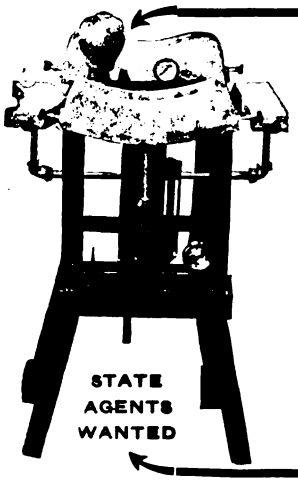
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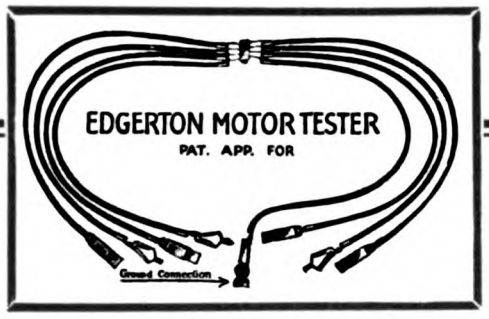
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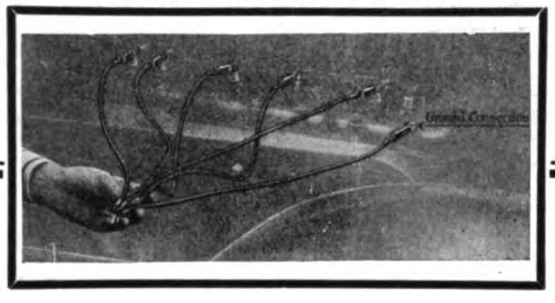
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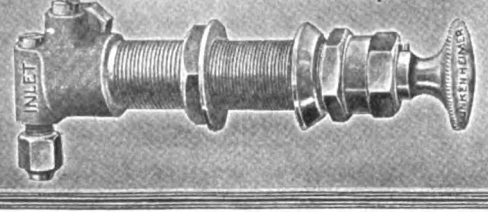
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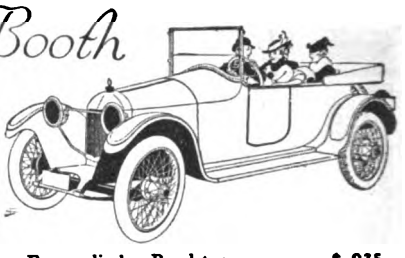
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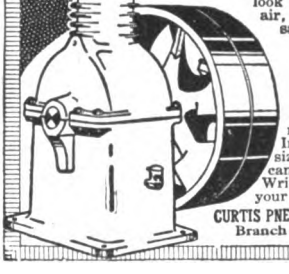
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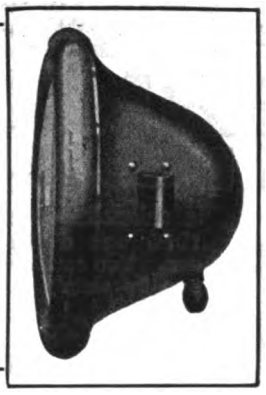
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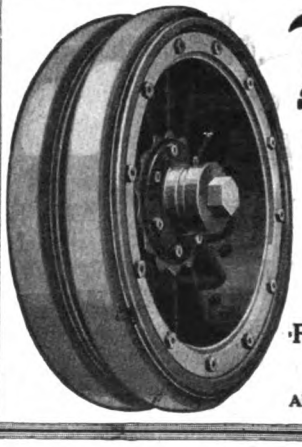
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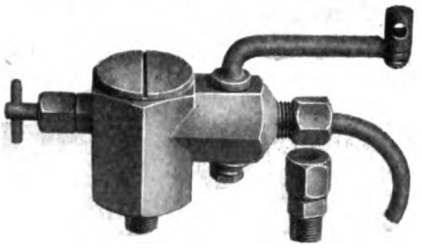
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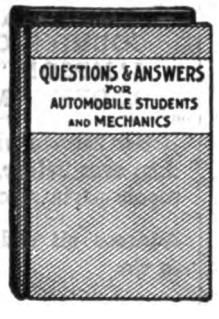
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31x4	19.75	13.00	2.90
32x4	20.10	13.25	3.05
33x4	20.95	13.75	3.20
34x4	21.35	14.15	3.30
35x4	22.20	14.85	3.40
36x4	22.55	15.20	3.50
34x4½	28.60	18.50	3.75
35x4½	29.70	19.50	3.80
36x4½	30.10	20.00	3.90
37x4½	31.20	20.80	4.20
35x5	33.85	21.00	4.25
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34x3½	9.50	2.55	36x4½	17.50	4.25
36x3½	10.75	2.75	37x4½	18.00	4.26
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34x3½	5.50	1.60	36x4½	8.25	1.85
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32x4	11.50	2.55	35x5	17.80	4.00
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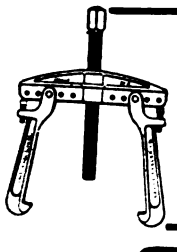

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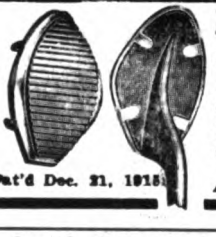


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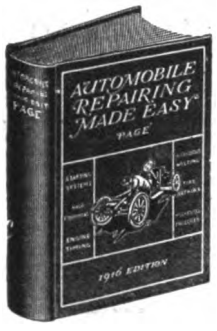
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By VICTOR W. PAGE, M.E.



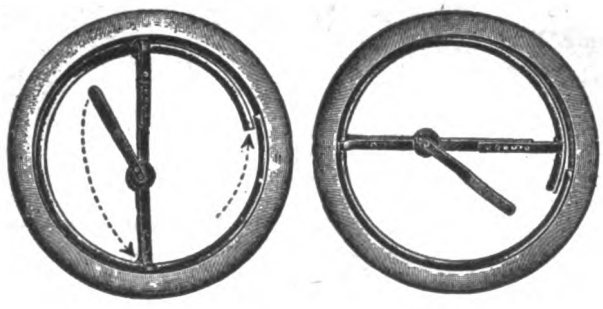
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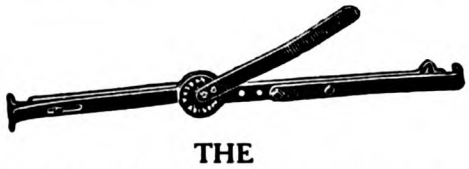
This book contains special instructions on electric starting, lighting and ignition systems. Tire repairing and rebuilding. Autogenous welding. Brazing and soldering. Heat treatment of steel. Latest timing practice. Eight- and twelve-cylinder motors, etc., etc. A guide to greater mechanical efficiency for all repairmen. You will never "get stuck" on a job if you own this book.

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To remove a tire: After the air is let out of the tire and the rim unlocked, place one end of the compressor 4 or 5 inches from the end of the rim; then place the device straight across the rim, hooking the other end of the compressor on the rim opposite. Push the handle—the rim collapses.

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Advertisers' Index

A

Ahlberg Bearing Co. ... 98
Ajax Rubber Co. ... 117
Akron Auto Garage Co. ... 106
American Bronze Co. ... 50
American Bureau of Engineering ... 106
Ames Co., F. A. ... 109
Anderson Steam Vulcanizer Co. ... 102
Arthur Vulcanizing Machine Co. ... 97
Automobile, The ... 104
Auto Pedal Pad Co. ... 117
Auto Safety Light Co. ... 97

B

Backus Novelty Co. ... 109
Bailey Non-Stall Differential Corp. ... 65 to 68
Battle Creek Vulcanizing Eq. Co. ... 108
Benford Mfg. Co. ... 105
Blake Signal & Mfg. Co. ... 117
Bobbe & Co., A. ... 96
Bock Bearing Co. ... 71
Bosch Magneto Co. ... 107
Bower Roller Bearing Co. ... 93
Brown-Lipe-Chapin Co. ... 108
Brown Mfg. Co., J. W. ... 108
Brunswick Motor Car Co. ... 107

C

Cassidy, E. A., Inc. ... 104
Castle & Kyte ... 79
Champion Ignition Co. ... 101
Champion Spark Plug Co. ... Front Cover
Chase & Co., L. C. ... 58-59
Chicago Auto Supply House ... 117
Chicago Solder Co. ... 98
Cincinnati Auto Specialty Co. ... 100
Cole Motor Car Co. ... 62-63
Collison, George A. ... 117
Corbin-Brown Speedometer Co. ... 3
Crane Puller Co. ... 117
Curtis Pneumatic Mach. Co. ... 106
Cutler Hammer Mfg. Co. ... 76

D

Delion Tire & Rubber Co. ... 109
Detroit Accessories Corp. ... 55
Detroit Battery Co. ... 90
Detroit Electric Welder Co. ... 56
Diamond T Motor Truck Co. ... 85 to 88
Disco Electric Starter Co. ... 80

E

Eclipse Mfg. Co. ... 105
Edgerton & Co., R. G. ... 103
Eisemann Magneto Co. ... 101
Empire Tire & Rubber Co. ... 64
Eureka Rim Corp. ... 118

F

Fedders Mfg. Co. ... 108
Firestone Tire & Rubber Co. ... 108
Fisk Rubber Co. ... 2
Foremost Farm Papers ... 104
Fried & Stonier Co. ... 107
Fulton Co. ... 109

G

Gardner Governor Co. ... 102
Gibson-Hollister Mfg. Co. ... 108
Goodman Auto Body Co. ... 102
Grant Motor Car Corp. ... 77
Grossman Corp., Emil ... 106
Gulf Refining Co. ... 99

H

Hal Motor Car Co. ... 78
Hartford, E. V., Inc. ... 105
Harvey Spring Co. ... 72
Hawthorne Mfg. Co. ... 105
Haywood Tire & Equipment Co. ... 83
Henley, Norman C. ... 118
Hilborn Co. ... 118
Hill Insulating & Mfg. Co. ... 52-53
Hill Pump Valve Co. ... 54
Houk Mfg. Co. ... Third Cover
Hurlburt Motor Truck Co. ... 107
Hyatt Roller Bearing Co. ... 107

Digitized by Google

Advertisers' Index

I
Imp Carbon Chaser Corp. 107
Inter-State Motor Co. 108

J
Jackson Automobile Co. 82
Jenkins Vulcan Spring Co. 100
Johns-Manville Co., H. W. 109

K
Kant-Leek Mfg. Co. 103
Kellogg Mfg. Co. 57
Kelly-Springfield Tire Co. 99

L
Laminated Shim Co. 98
Lewis Electric Welding & Mfg. Co. 117
Liberty Motor Car Co. 104
Lunkenheimer Co. 103

M
Manley Motor Corp. 106
Monitor Motor Car Co. 76a to 76d
Mosler & Co., A. R. 100
Motor Age 105

N
National Association of Automobile Accessory Jobbers 4
National Rubber Co. 105
New Departure Mfg. Co. 106
New Era Spring & Specialty Co. 117
New Process Gear Corp. 109

P
Pathfinder Co. 74-75
Perlman Rim Corp. 91
Pouvailsmith Corp. 89
Prest-O-Lite Co. 69

Q
Quaker City Rubber Co. 108

R
Redee Mfg. Corp. 109
Regal Motor Car Co. 107
Reo Motor Car Co. 70

S
Saxon Motor Car Corp. 94
Scripps-Booth Corp. 104
Selden Truck Sales Co. 119
Shaler Co., C. A. 92
Sheldon Axle & Spring Co. 104
S. K. F. Ball Bearing Co. 104
Sparks-Withington Co. 105
Spiltdorf Electrical Co. 73
Spring Nut Lock Company 99
Standard Electric Tool Co. 104
Staude Mfg. Co., E. G. 51
Stephens Motor 60
Stevens & Co. 100
Stewart-Warner Speedometer Corp. Second Cover
Storm & O'Hair Co. 119
Studebaker Corp. 120
Sunderman Corp 106
Swinehart Tire & Rubber Co. 102

T
Thurston Auto Supply Co. 105

U
U. S. Light & Heat Corp. Back Cover
Universal Car Equipment Co. 84

V
Van Cleef Bros. 106
Vanderpool Co 102
Van Sicklen Co. 103

W
Waltham Watch Co. 49
Warner Auto Top Co. 102
Wayne Oil Tank & Pump Co. 95
Westfield Chemical Co. 100
Whitney Mfg. Co. 102
Wilson & Co. 81
Woodworth Mfg. Corp. 61

Z
Zenith Carburetor Co. 107

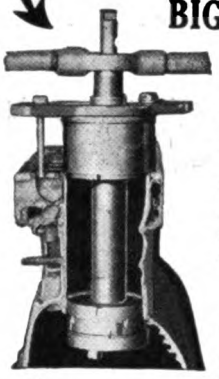
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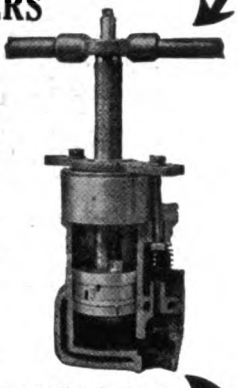
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The Standard Improved Machine

Is adjustable and will rebore practically

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Automobile, Motorcycle, Aeroplane, Small Marine, Tractor and Stationary. A Portable Machine for operating by hand, low speed drill-press or other power.

SIMPLE SPEEDY ACCURATE,

and can be operated by anyone familiar with machine tools.

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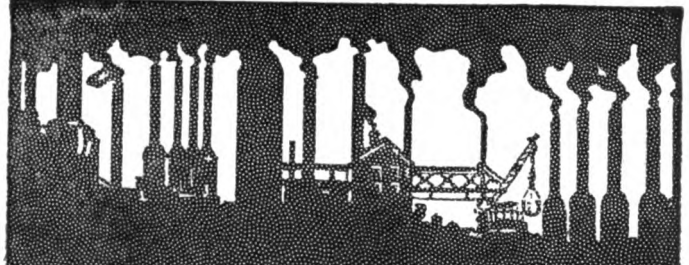
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Write for it

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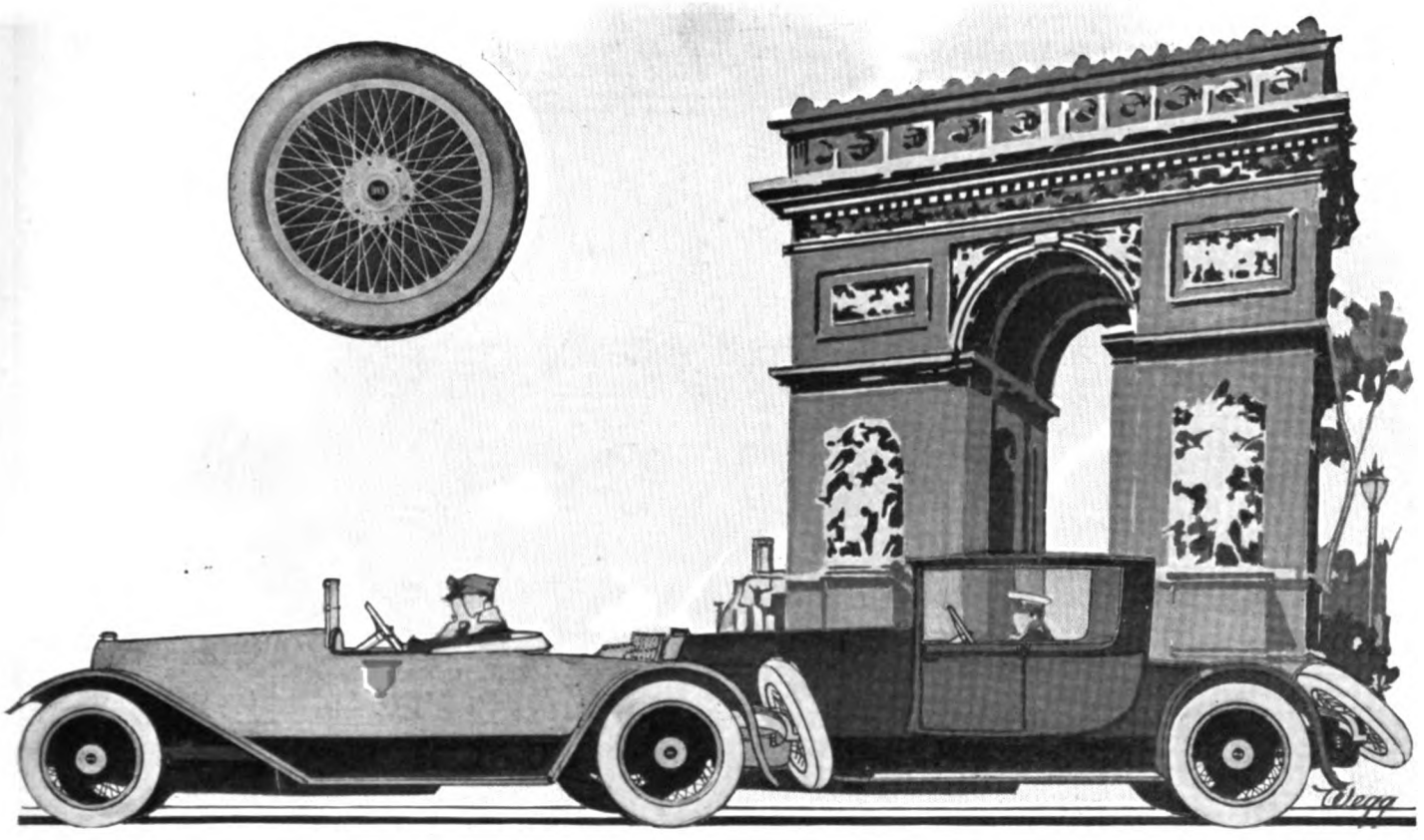
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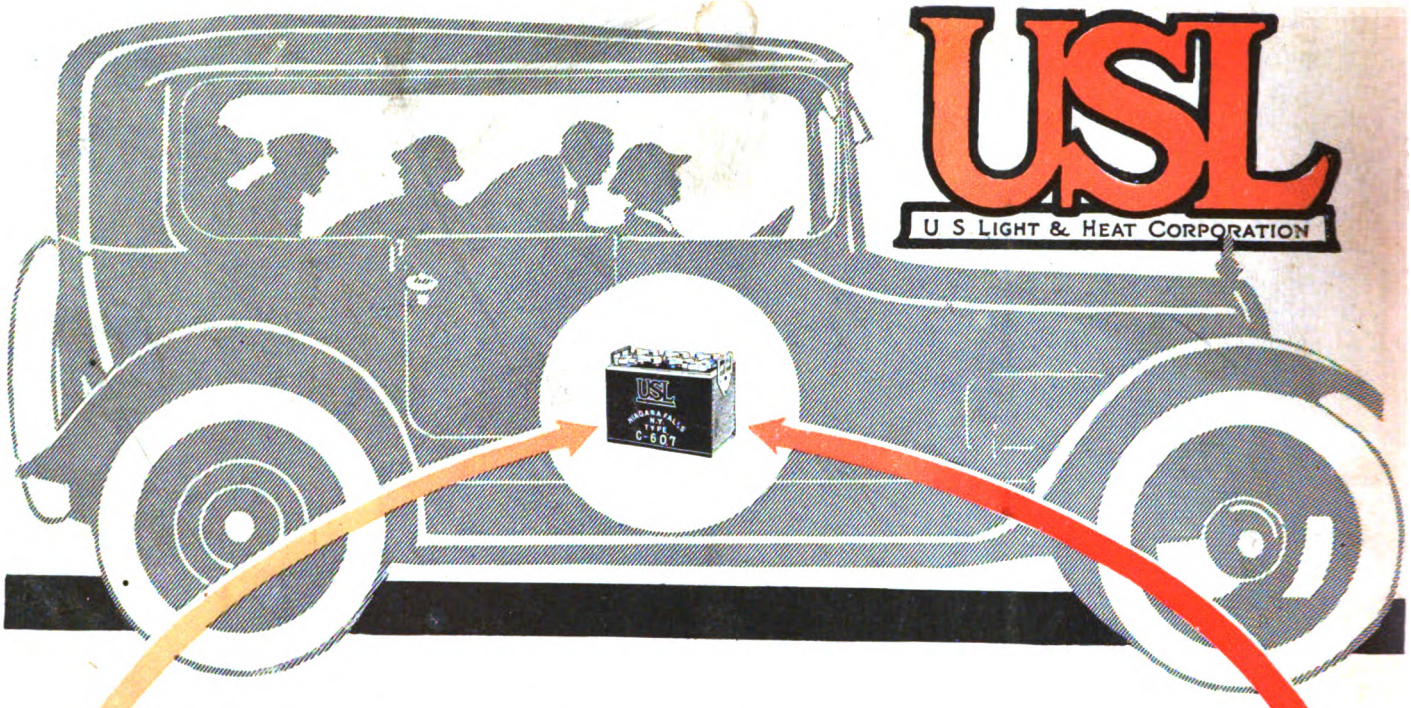
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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Volume I.
No. 5

New York, January 31, 1917

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Wouldn't you rather sell that kind of car — the

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Last year Hudson dealers had the most wanted car in the world. They could not begin to get enough Super-Sixes to fill orders.

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Editorial Contents—Page 3 Advertisers' Index—Next to Last Page

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Profit by their experience.

Stop trying to "put across" unknown accessories. Take the sure thing—the advertised accessory—the one that's known and liked. That's the way to make your business pay.

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CHICAGO, U. S. A.



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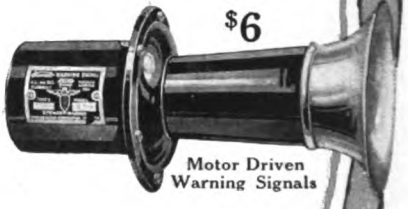
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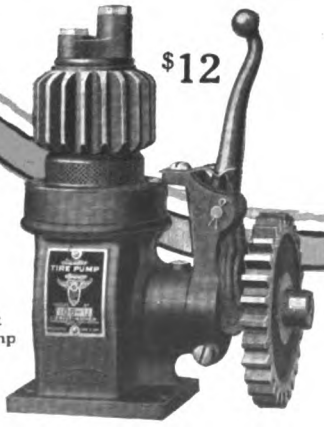
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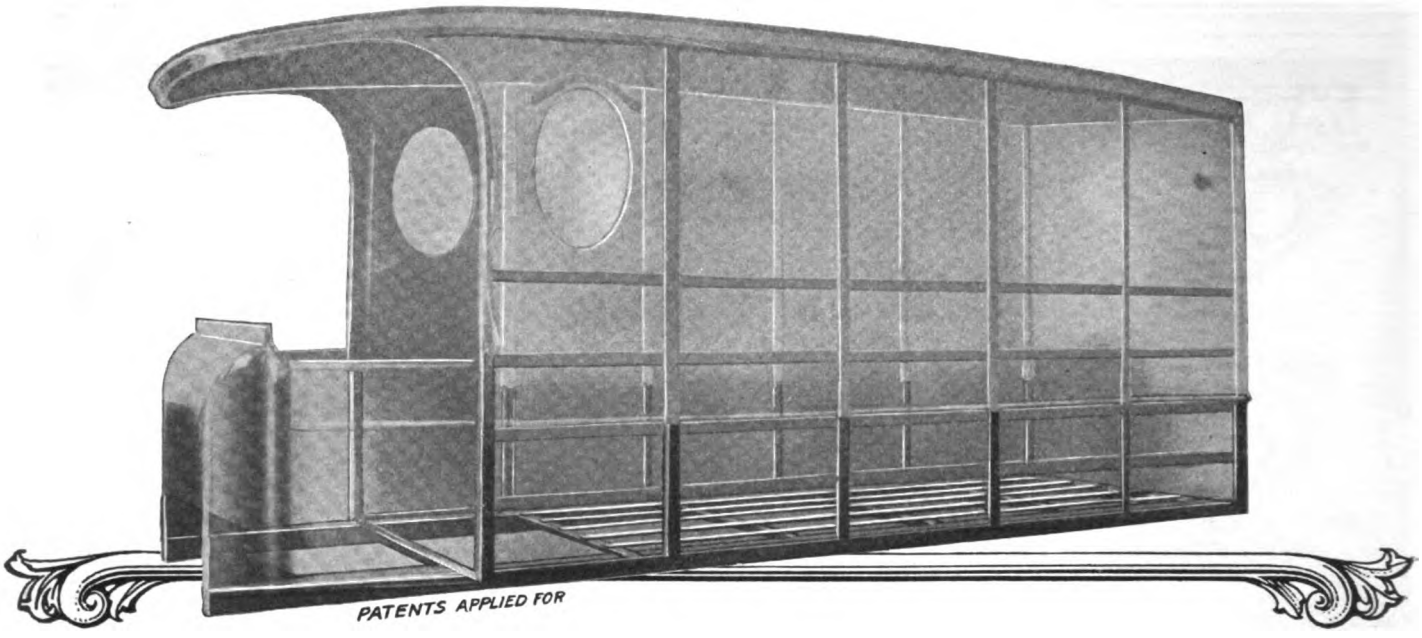
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DEALERS, JOBBERS AND GARAGEMEN

PUBLISHED EVERY WEDNESDAY

The Class Journal Co.
231-241 West 39th Street, New York City
Horace M. Swetland, President
W. I. Ralph, Vice-President E. M. Corey, Treasurer
A. B. Swetland, General Manager

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Detroit—95 Fort Street, West, Phone Main 1351
Cleveland—516-517 Swetland Bldg., Phone Prospect 167

Subscription, Per Annum (Postage Paid).....$2.00
Foreign and Canadian Subscriptions..... 4.00
Single Copies (Postage Paid).....10 Cents

Postage Stamps will be accepted in payment for subscriptions. Checks, Drafts and Money Orders should be made payable to MOTOR WORLD.
The payment of subscriptions will be shown by stamping the date of expiration—the month and year—on the wrapper that carries your paper each week. No other acknowledgment necessary.

Cable Address, "MOTORWORLD," New York
Entered as second-class matter at the New York Post Office, Nov., 1900
Member of the Audit Bureau of Circulations

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Editorial Contents

The National Business Show.....6-7
As usual the Chicago show is the great business gathering place for dealers, garagemen and factory officials.
Old Guard Sings of Prosperity.....8-10
The year gone by has been a good one and fortune has whispered to many Western dealers. More money might have been made but for used cars and bad roads.
San Francisco's Row—World's Finest.....20-21
Refinement in the fiery furnace has given the metropolis of the West, the most beautiful, the most lasting motor car row.
San Francisco's Row in Pictures.....22-25
The Coast Dealer's Three Problems.....26-33
Dealers Who Have Made Good.....28-29
Here are biographies and pictures of Earle C. Anthony and L. H. Rose.
Better Business Planned by Jobbers.....34-37
The strong will help the weak and cement the bonds of membership closer.
The Jobbers' List.....38-39
Buffalo's Wealth Doubled.....40-41
Baltimore Has a Buying Show.....42-43
64,000 Motor Cars.....44-48
This is what Michigan dealers will sell in 1917.
New Era in Merchandising.....69
Chicago opens its second salon to sell cars on their looks.
What Is Gasoline?.....70
Under Inflation Raises Consumption.....71
It may boost cost of fuel as much as 25 per cent.
Repairshop Short-cuts.....52-53
Better Mechanics.....60-62
Adjusting the Buick rear axle.
System and Accounting.....58-59
Winter Business.....56-57
Scientific Garage Construction.....54-55
Questions Answered.....49-51
Angles of the Law.....63
The Retail News.....66-68
Regular News Department.....72-75

Advertisers' Index on Pages 134-135

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BALL BEARINGS
(Patented)

As determining the capacity of a car or truck for rendering high-class service, no single item however small can be considered of minor importance. For instance—a broken or sluggish or inefficient bearing in magneto or lighting generator or starting motor will so cripple these accessories as to destroy their functions in the unit performance by which the car or truck will be measured.

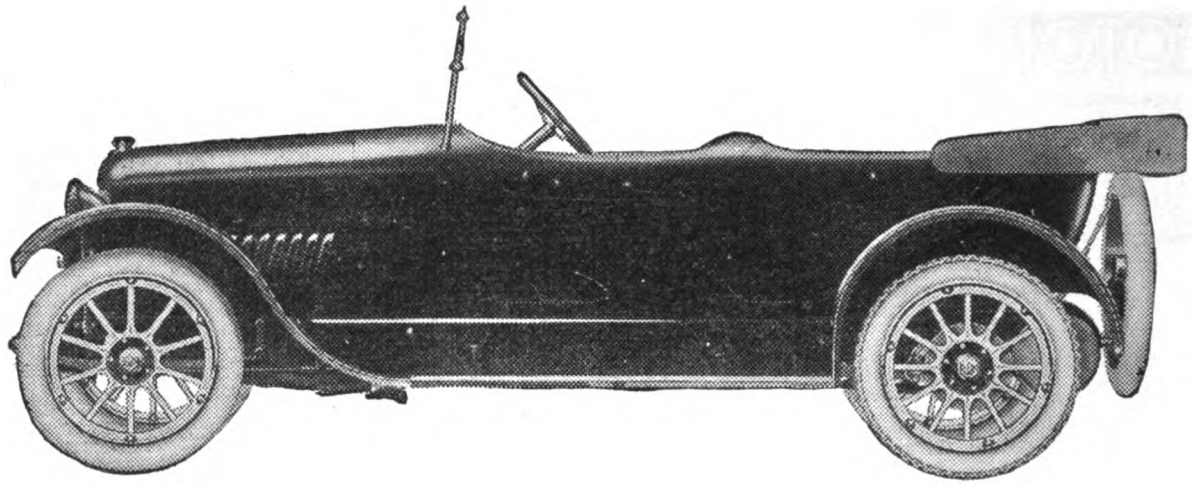
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Distinction and Comfort

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The Elgin Six, now in its second triumphant year, has stood "The Acid Test" by winning perfect scores and highest honors in some of the most gruelling endurance and economy runs of the past year.

Three Elgin Sixes, on a hard two-days' run under the auspices of the Chicago Motor Club, made perfect scores and averaged 25.6 miles to the gallon of gasoline.

The Elgin Six has just established a new record of 1,626 car-racking, stamina-testing miles, in 67½ hours, between Chicago and Miami, Fla.

Thirteen hours of this time was driven in a heavy rainstorm that made the roads slippery and dangerous, and in some places so deep and heavy with mud that the average car could not negotiate them at all.

The route included the steep, rocky mountain grades of Kentucky and Tennessee, the heavy sands of Georgia, and the slimy, treacherous swamp roads of Florida.

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Many other remarkable Elgin performances have firmly established the Elgin as ***a mechanical masterpiece,*** and the champion for long sustained speed, endurance and economy.

IMPORTANT TO DEALERS—The completion of our big, modern, daylight Plant No. 2 has so increased our production that we are now entering new territory. Yours may be open. Better wire us for application blank and full particulars of 1917 best money-making proposition for dealers.

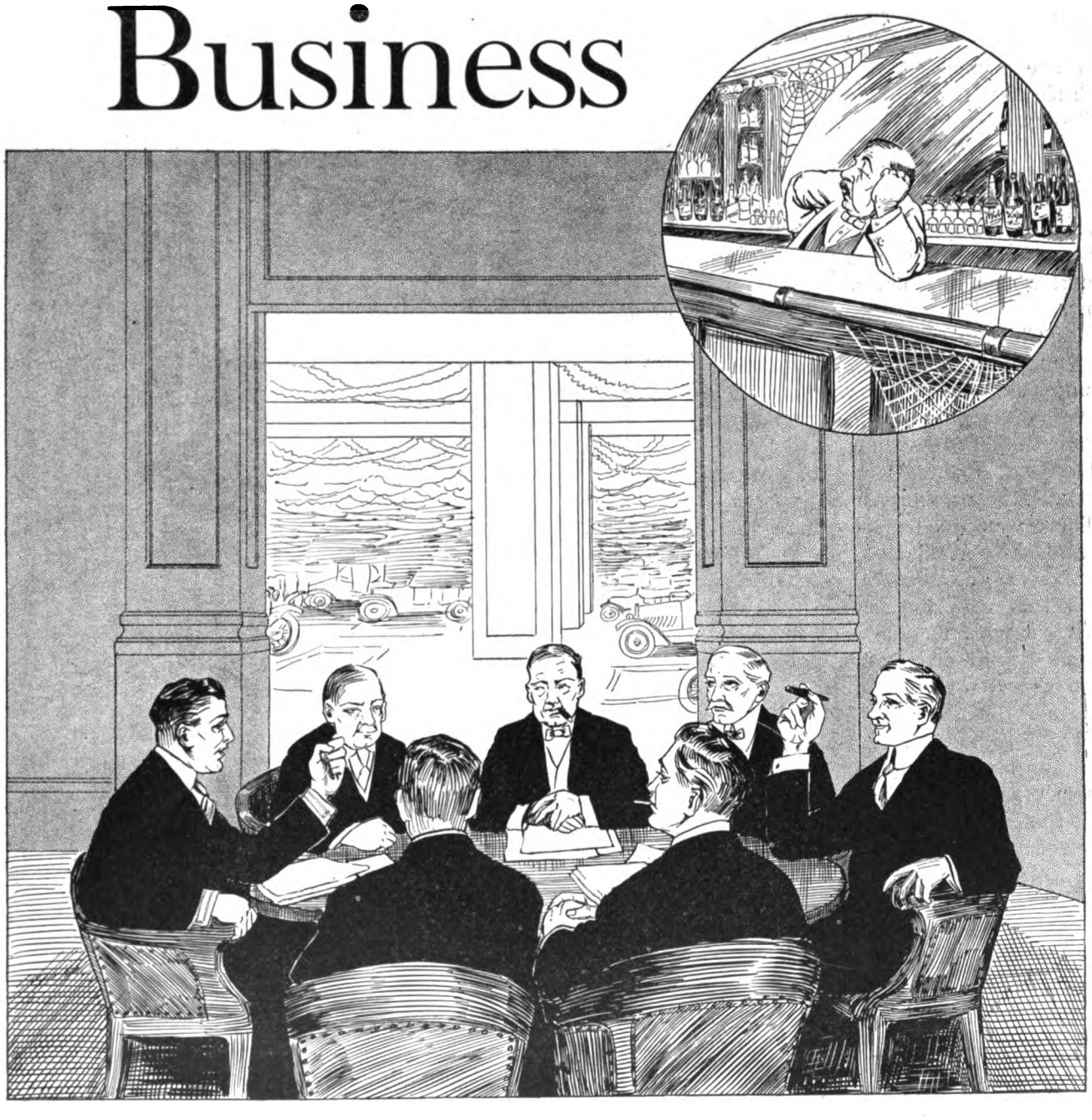
Elgin Motor Car Corporation, Chicago, U. S. A.

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Vol. L | New York, U. S. A., Wednesday, January 31, 1917 | No. 5

Business



Each year the great National Shows are devoted more to business. Dealers and factory men are getting their legs under the round table—News note.

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CHICAGO NATIONAL S

CHICAGO'S annual Coliseum show opened Jan. 27 with the usual struggling crowds waiting in line at the entrance for over an hour before the doors opened at 2 p. m., and with a very attractive setting for the 1917 cars. Manager S. A. Miles has not given as bright and buoyant a setting as in former years, but it is richer in its deeper color tones.

The show is as big as former years. Every place is filled and as usual there are cars in many of the hotels. Many stores have been rented along Michigan and Wabash Avenues for late comers.

Wabash Avenue was literally jammed with motor cars all afternoon and evening, and to-night Chicago within blocks of the Coliseum is brim full of cars; they are packed two rows deep along both sides of several streets.

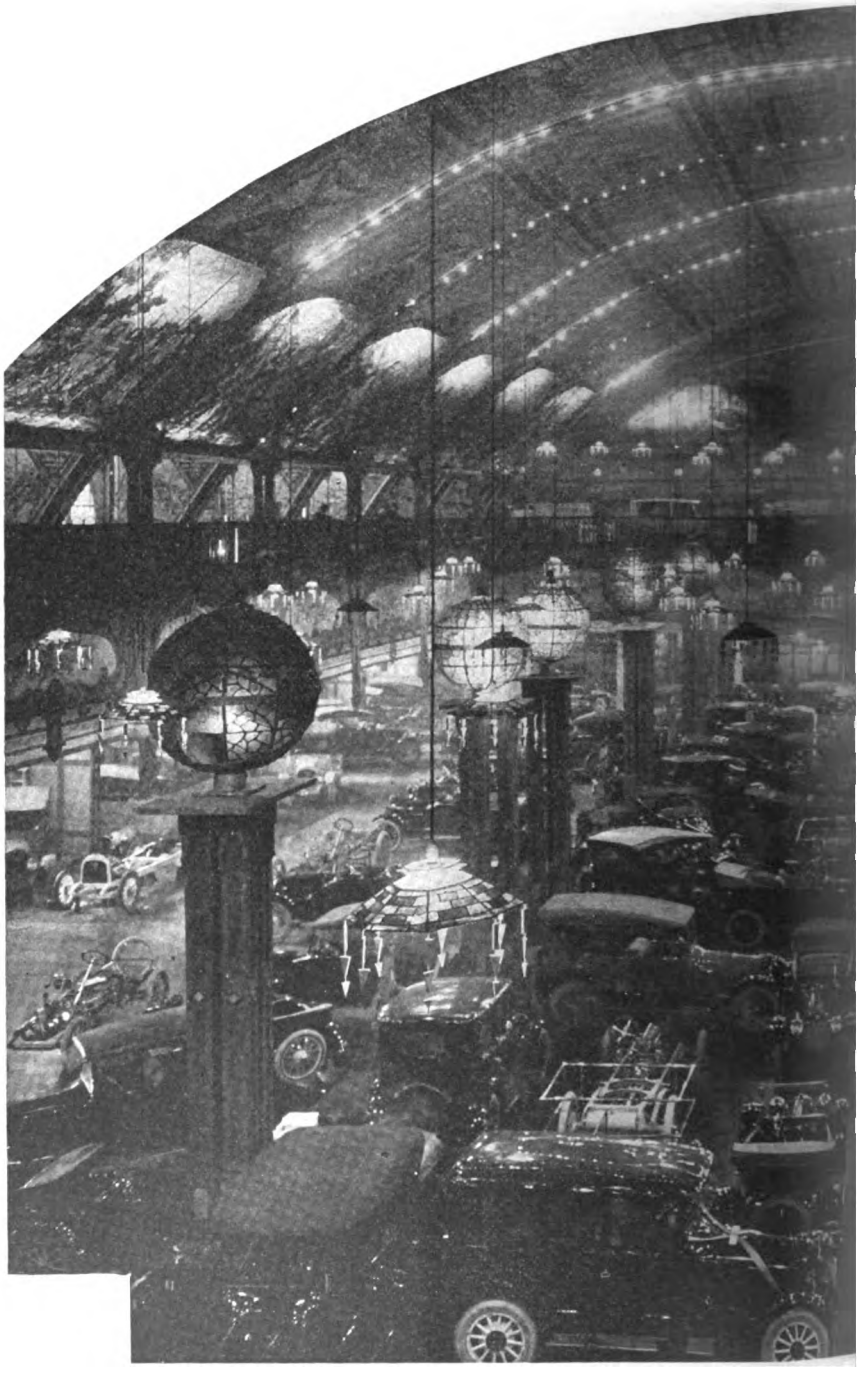
To-day (Saturday) has been a real Chicago "I Will" kind of day. Hotels are filled and already leading hostelries are refusing rooms to long lines of visitors. Theatres are nearly all sold out for next week. To-night the setting is complete for the seventeenth annual show.

The Chicago show each year gets a bigger reputation for being the national business show of the year. New York's show is quite a social function, but Chicago is the business show.

Last year 3000 dealers registered and this year the number will be greater.

There was much money made in the great Middle West last year in selling cars. Money is plentiful with city men as well as with the farmer. If crops were not over 60 per cent normal in Illinois prices are double normal and there is more money than came last year from a full crop. Hogs and cattle are at sky-high prices. All of these things mean more car buying, and the stage is properly set.

The usual custom of former years is followed: It is really a four-ring show. There are cars in four separate buildings, the Coliseum proper, with its gallery filled with accessories; the Coliseum Annex at one end of the Coliseum, with accessories on the second floor, and in the basement of the Greer building which adjoins the Annex; and lastly, at the end of a short and muddy trip through what is now familiarly known as "pneumonia alley," the large First Regiment Armory, filled with cars on the main floor and with the four sides of its

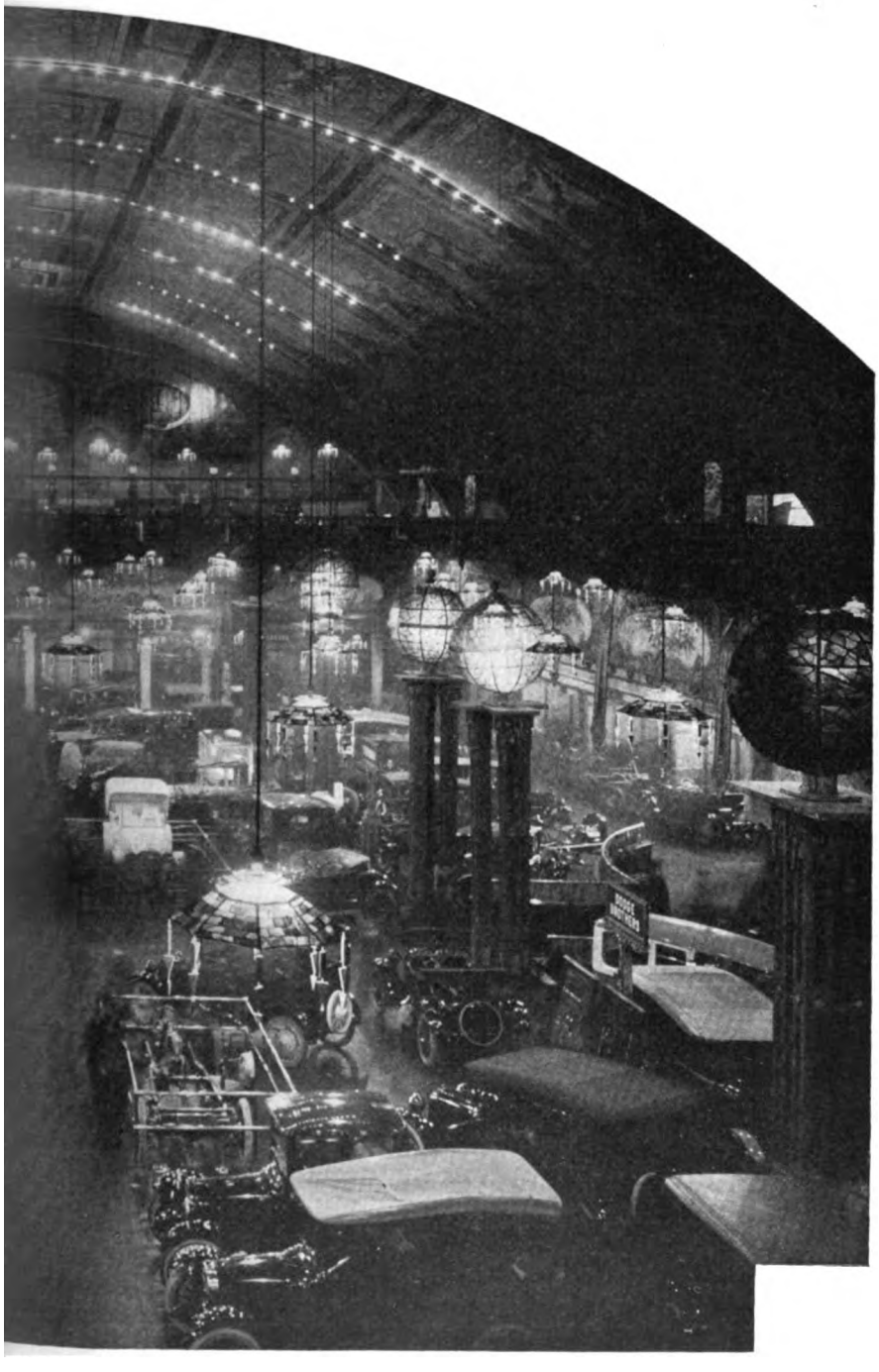


Miles has outmilesed himself. The Coliseu of pillars with illuminated globes atop.

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STAGES BUSINESS

)W



is an English castle even to the two rows
The ceiling is made of allegorical panels

galleries well stocked with accessories.

It is a representative show stocked with most of the special show cars seen in New York and as an added attraction a few new cars not seen there. For example there are such newcomers as Hassler, with its special spring suspension; the Chicago light six; the Stephens, and the Classic made by the Classic Motor Car Corp., Chicago, and not to be confused with the Classic model of another manufacturer.

Of course, there are some not really new, but still not shown at New York. These include: Glide, Maibohm, Monitor, Woods dual power and Dixie. The Ohio electric shows a new model and, and there are several new body designs.

But the show really includes more cars than are actually in the Coliseum and Armory, for Sunday night there opens the Second Annual Salon in the Congress Hotel, in which will be a few cars formerly seen at the Coliseum, such as White, Locomobile, Simplex and the new Doble steam cars. There will be several foreign makes shown also and the show is expected to be a de luxe exhibition of fine custom-made bodies for fastidious buyers.

As an accessory show Chicago is not nearly as good an exhibition as Grand Central Palace, New York, largely due to lack of room. There are only two really good accessory spaces in the show, one the large gallery of the Coliseum and the other the second floor of the Coliseum Annex.

There are other accessories in the gallery of the armory, but it cannot be classed as good space. There are a few others in the basement of the Coliseum Annex. Unfortunately the accessories are scattered too much.

The stock of new accessory ideas is not as good as in former years. New York's show had a big display of new ideas and Chicago has only about 16 new ideas to add to the list.

Chief among these is the Heco vacuum feed, of which simplicity is a feature. Others are: Protector spark plug, Jackson electric valve grinder, Burg cotter pin puller, Easyon chains, Solar duplex headlight, Warner wheeltilt, Steel-lined brake bands for Fords, Badger jack, Vesuvian heater, Shakespeare carbureter fitting, Dixon's non-leak, Vesta searchlight, West cast-steel wheel, Oakes kranklock, Lipman air service station, Stewart-Warner speedometer drive.

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Old Guard Sings of Prosperity

THEY'RE all there—at the Chicago show—and fortune has whispered to many. Some of it is due to time payments and more money might have been made but for the used car bug-a-boo and the Illinois bad roads which discourage the sale of cars.

PRACTICALLY all of the old guard of Chicago dealers are on duty at the different exhibit spaces to-night, and each has his space well manned with a force of spic and span salesmen. There are about as many chassis as usual in place, but very few chassis lecturers, about the only one being to explain the new Woods gasoline-electric chassis shown in the Armory.

It is only a coincidence, but interesting, that this chassis occupies the identical space in the Armory that Charles Y. Knight occupied many years ago, when his sleeve-valve motor was first placed in a show. It will be interesting ten years hence to reflect on what has been the progress of the gasoline-electric idea as compared with the sleeve-valve idea.

Some Well-Known Names

Reverting to the old guard of Chicago dealers, Jim Levy, now handling the Chalmers, Saxon and Premier, is repeating that ability shown in his old bicycle days by covering three different booths at the same time. But you can trust Jim for organization, so that he is not so rushed after all.

Henry Paulman, the perennial treasurer of the Chicago Automobile Trade Association, and his side-kick, Joe Lawrence, were both on hand all evening in the Pierce booth, which was as busy as usual. Joe had to give a little attention to the Velie space, which he also has handled for several years.

Tom Hay, with his Chandler, has one of the six best positions in the Coliseum, and was in charge to-night, exercising his usual co-operation system—with the salesmen doing the work.

Joe Davis, president of the Chicago Trade Association, and perpetual manager of the Winton branch, has first position at the left on entering the Coliseum. Across from him is the King.

Louis Geyler, who has had such success for years past with the Hudson, was on the job all evening, apparently making good in getting away with that 50 per cent increase in number of Hudsons he is going to sell this year.

A. M. Robbins was busy all evening with his space full of Jefferys. Robby, as the row knows him, has been tripling his wholesale trade of late and has his mind set on a big year.

W. G. Tennant, for years Peerless dealer and for several seasons past with the Oakland retail and wholesale, was in charge, and showed an attractive example of the small Oakland finished in blue with victoria top, six wire wheels, slip covers and other equipment. Tennant has been featuring special paint jobs for several months.

Space will not permit to go all along the line to renew friendships of years standing. Charles Price has the Overland corner, the best space in the Coliseum, having first choice each year because leading in volume of output. Across the aisle one way is Buick, and across another way is Studebaker with its gold car, a real magnet for town and country alike.

There are many of the other old guard on hand to-night. Harry Branstetter, of Kissel fame; Al Schillo, who has made the name of Mercer known around the Windy City for years; H. M. Allison, of the Packard, who gained further distinction by his work as president of the local trade association when it put over the Central Used Car Market Report showing used car prices.

The Money Jingles

MANY of the Chicago dealers have made good money in the past year, and, for that matter, a few of them have been making good money for several years. The gossip through the show to-night is that a few of the fortunate ones have made close to quarter of a million, which is just about double what they made a year ago. When a dealer selling a car that lists at over $1,000 can place over a thousand of them it is not hard to calculate about how much money he must have. There is no excuse for any Chicago distributer who failed to make money last year. He had only to get cars and then deliver them provided he could get them.

Many Time Payment Sales

It is rather paradoxical that, although the demand last year for cars was very great, the time payment movement made great headway; in short, 1916 marked the real start of the time payment idea along Michigan Avenue. Some dealers sold over one-half their cars that way and others over 75 per cent.

As another seeming paradox it has

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been the people of reasonable means who have taken advantage of time payments—business men who are able to buy two, three or four cars. This class of man rarely carries large bank balances; he keeps his money invested; consequently, when he wishes to buy a car, he may not find it convenient to take $800 or $1,000 out of the bank. He can spare perhaps $300, and so decides he might as well borrow from the dealer, so to speak, as go to his bank and borrow it there. This class of man has bought heavily under the time payment plan, and with him the system works out very well. It seems general along Michigan Avenue that dealers have pushed the system vigorously for many months.

The Banker Helps

In all of these time payment plans the local banker generally accommodates the dealer, and there has not been such general use of those corporations formed for this work as was expected. Those corporations have made much greater progress in the motor truck field.

The dealer handling time payment sales protects himself by a chattel mortgage, which he registers; he also protects himself by demanding insurance, which permits him to get whatever equity is due him; he also demands a cash deposit of 25 to 50 per cent of the car value. The notes taken are then spread out over 6 to 9 and in a few cases 12 months. The dealers differ in the length of time for the notes. If the sale is made in April or May 9 months are given by some, but if made in August the pay period is cut to 6 months and in a few cases to 4 months.

They Pay While They Ride

The general consensus of opinion among Chicago dealers is that all buyers taking advantage of time payment plans meet their notes so long as the weather is fine and they are using the car; but when the weather is cold, the roads rough and they cannot use the car payments often stop and the dealer steps in and takes the car. He gets his equity and sometimes there is a little left for the original buyer.

This idea of selling on time payments has invaded the used-car field, and now quite a percentage of the cars are sold on this basis. In such cases the original payments are higher, being perhaps 50 per cent more, and the note period shortened.

Lots of Used Cars

THE used car situation in Chicago is not anything to be especially proud of, and several of the dealers shrugged their shoulders to-night when the subject was broached. There are more used cars along Michigan Avenue to-night than there were a year ago. But the dealers are not worrying much, as they look for a good market.

A new phase of the used car business that has developed during the year with medium-priced cars is that of fixing the cars up before selling them. Several dealers are not selling a used car without repainting it, and one or two have introduced the idea of demonstrating every used car sold. This is quite a new idea and is apparently working satisfactorily.



Here we have the interior of an old English castle all done in warm shades of red and brown. Take a slant at the ceiling which, take it from Sam Miles, is "allegorical."

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Chicago distributers have a few pretty strong complaints to lay before the car maker on the score of winter storage of new cars. The Chicago distributers are liberal takers of cars in winter months, such as November, December, January and February. They find that their dealers through the territory do not store many, as it is hard to make sales through Illinois in these months. The roads are impossible. This puts the entire load on the distributer.

He arranges with his bank for the best borrowing arrangement on cars he can. Some can borrow as high as 75 per cent, others 80 per cent and some others a little higher. They pay perhaps 6 per cent on this money for several months. In addition they are paying monthly storage charges of $2.50 per car. Last year storage was plentiful at $2 per car per month, but not so this year. The dealer has to carry both of these loads, but pays the maker cash, so to speak, against bills of lading.

Can This Be Done?

Some of the dealers cannot see any reason why this interest and storage burden should not be divided with the maker, why he should not carry a part of the load, particularly as it is all done in order that he can make cars in the winter months and get his money as soon as they are made. The suggestion has been made that makers give a $25 additional discount on all cars shipped during the months of November, December, January and February. This would represent the various costs connected with the present practice. As to whether anything definite will be done remains with the dealers, who to date have not unitedly presented the matter to the manufacturers.

HOW EXHIBITS WERE DIVIDED

	1916	1917
Car manufacturers	80	92
Total number cars and chassis	294	374
Stripped chassis ..	52	50
Four-cylinder	106	101
Six-cylinder	135	164
Eight-cylinder	42	41
Twelve-cylinder ...	11	18
Total	294	374

Body Types—Open Cars

	1916	1917
Five-passenger	64	75
Six and seven-passenger	57	54
Two-passenger	33	21
Three-passenger	23	9
Four-passenger	10	47
Total	187	206

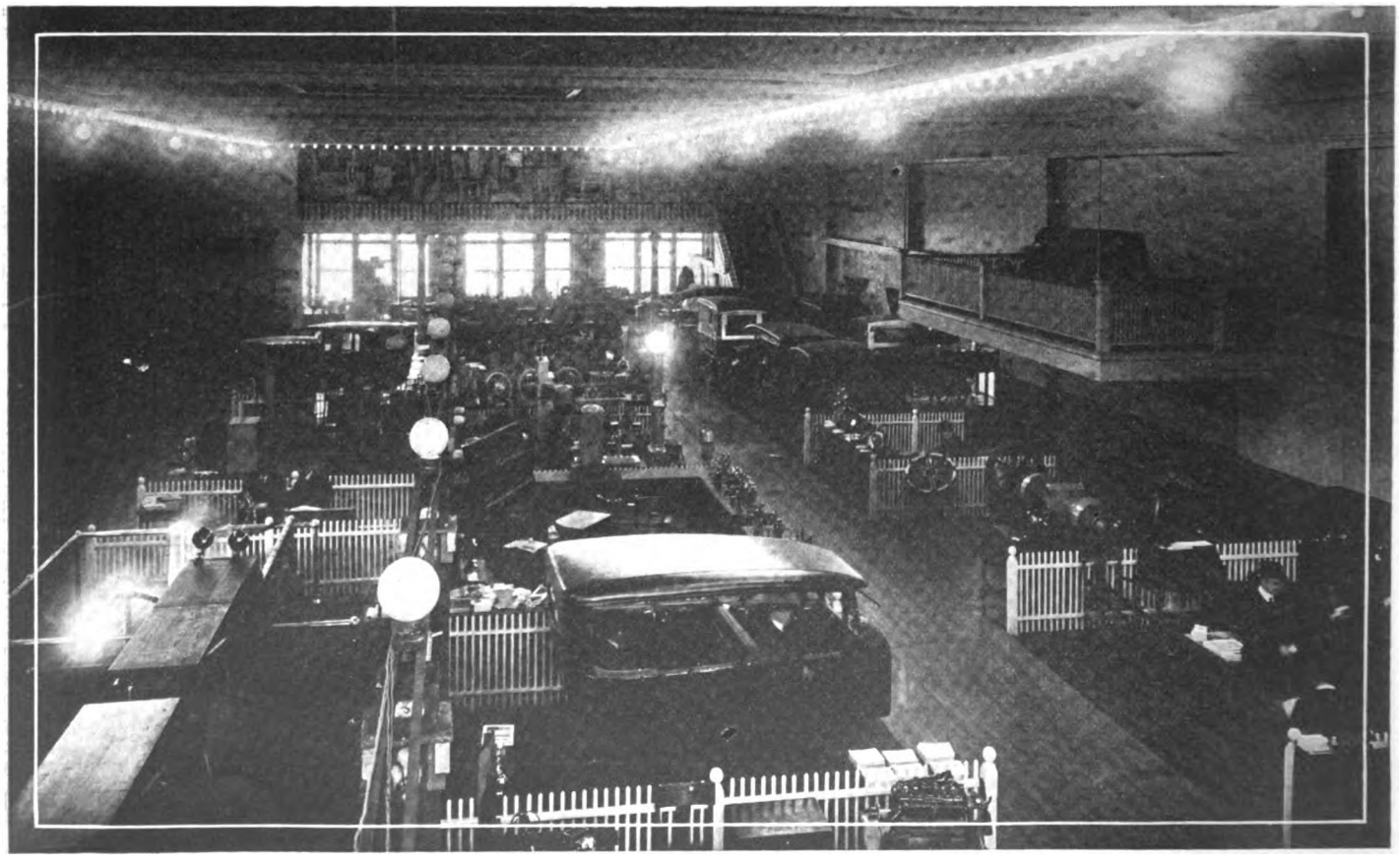
Body Types—Enclosed Cars

	1916	1917
Coupe	7	14
Sedan	10	26
Demountable top	18	9
Cabriolet	2	0
Limousine	10	12
Landaulet	1	0
Towncar	5	6
Berline	2	1
Total	55	68

Roads Kill Business

BAD roads throughout Illinois are to quite an extent responsible for the slowing up of car sales through the southern part of the State, and particularly through the great fertile corn belt, where land is worth $200 an acre. If Illinois had stone roads the dealers would sell cars every month in the year, in fact, as the weather is mild, the winter would become one of the great car using seasons. As it is to-day roads are impossible. They are broad, black paths of the blackest soil imaginable. They have ruts 6 or 8 inches deep.

When they are frozen up they are too rough to use. This inexcusable road situation in the richest agricultural State in the union is holding back the sale of motor cars by the tens of thousands. This situation is holding back the sale of enclosed cars, such as touring sedans, sedans and convertibles, all through the State. If Illinois had good roads there would not be the grave necessity for Chicago dealers storing 500 or 750 cars during the winter.



In the Coliseum Annex the decorations are never as elaborate as in the main building. Some people think the simplicity is a welcome change.

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Chicago Show Reveals Four New Cars

The Chicago Show discloses four new cars, the Stephens, Hassler, Chicago, and Classic. They are all of conventional construction, being assembled from standard units. In addition there are several cars not seen at New York, such as the Glide, Maibohm, Monitor, Woods Dual Power, and Dixie. On the other hand, some of the New York cars are not at Chicago, but none of the more prominent manufacturers is missing.

In almost every case the exhibits are the same as at New York, but Scripps-Booth has a new town car; the Anderson electric has a new body, and the Ohio electric is changed in body design but is the same mechanically.

ONE of the most interesting of the new exhibits is the Stephens Six, model 65, made by the Stephens Motor Branch of the Moline Plow Co., Freeport, Ill. It is attracting considerable attention on account of its newness and the fact that it is made by a department of a long-established concern. It represents up-to-date practice in assembled car design, incorporating a Continental engine, Zenith carbureter, Connecticut ignition, Willard battery, Gemmer steering gear, Auto-Lite lighting and starting, and other standard parts. It is also made as a roadster.

The Continental motor is the standard light six with 3¼ x 4½ block cast cylinders. The clutch is a multiple disk automatically oiled from the motor and requiring no attention. The gearbox furnishes three speeds and drive is taken through a propeller shaft with two universals to a floating axle.

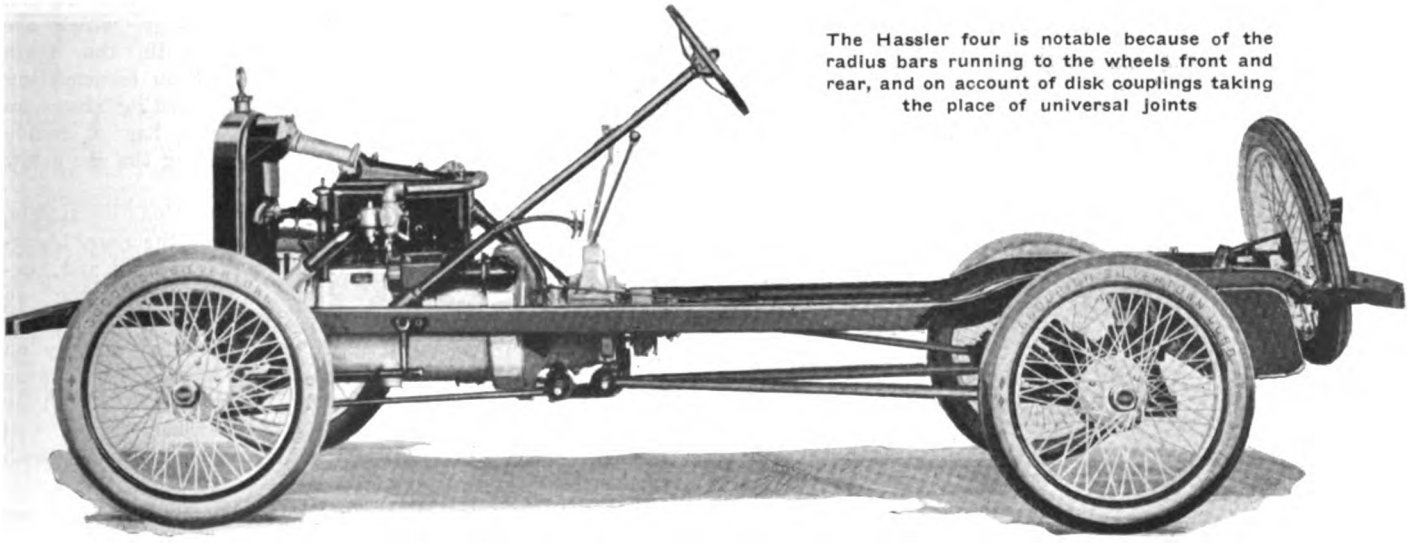
Both the drive and torque are taken through the rear springs in Hotchkiss style, and the springs are mounted directly beneath the side members of the frame. Wheelbase is 115 in. and tires 32 x 4, quick detachable with plain tread in front and all-weather non-skid in the rear.

The car is completely equipped and sells for $1,150. The 19-gallon gasoline tank is swung under the side frame members at the back of the chassis and the feed is by Stewart tank. There is a Stewart-Warner speedometer and a Stewart engine-driven tire pump equipped with a pressure gauge on the hose, an extra demountable rim, trouble lamp, and the usual jack, tools and repair kit are included.

THE Hassler, manufactured by the Hassler Motor Co., Indianapolis, is built by the same interests which produced the Hassler shock absorbers for Ford cars. It has been developed by Charles Merz, a racing driver, who has been acting as experimental engineer. While it is an assembled car it incorporates some unique features.

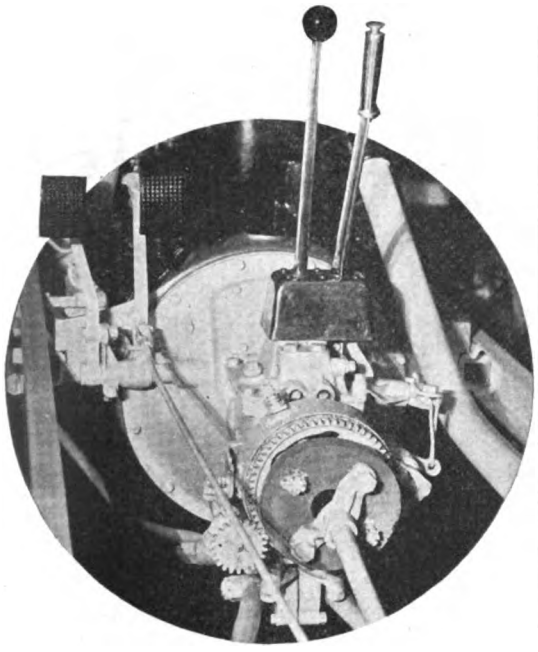
One point of note is in the floating drive, made up by two double Thermoid-Hardy disk couplings which are placed at each end of the propeller shaft in place of metal universals.

In the drive assembly there are two radius bars which extend from the rear

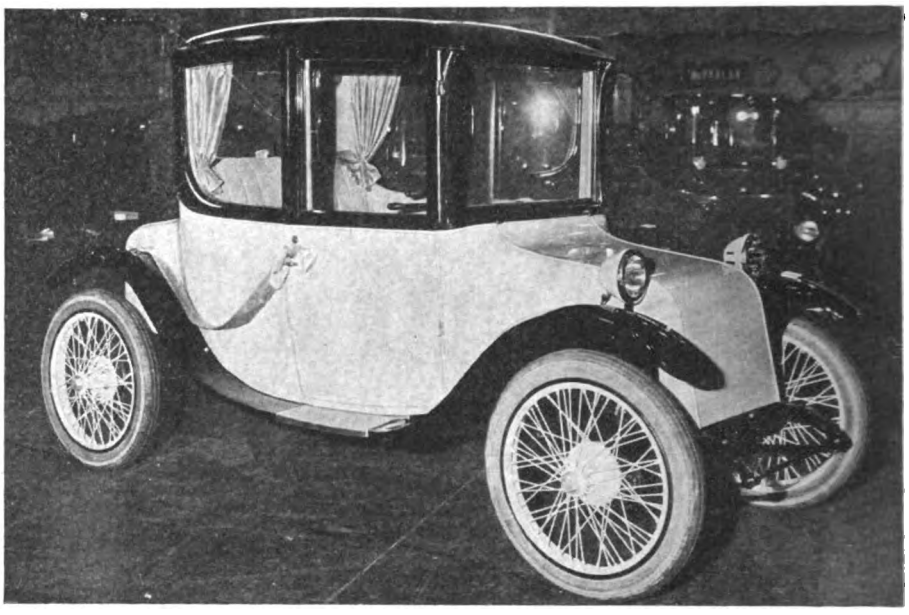


The Hassler four is notable because of the radius bars running to the wheels front and rear, and on account of disk couplings taking the place of universal joints

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Close-up of Thermoid-Hardy disk couplings used in Hassler four



New Milburn light electric brougham with wire wheels, black fenders and headlamps mounted close to the fenders

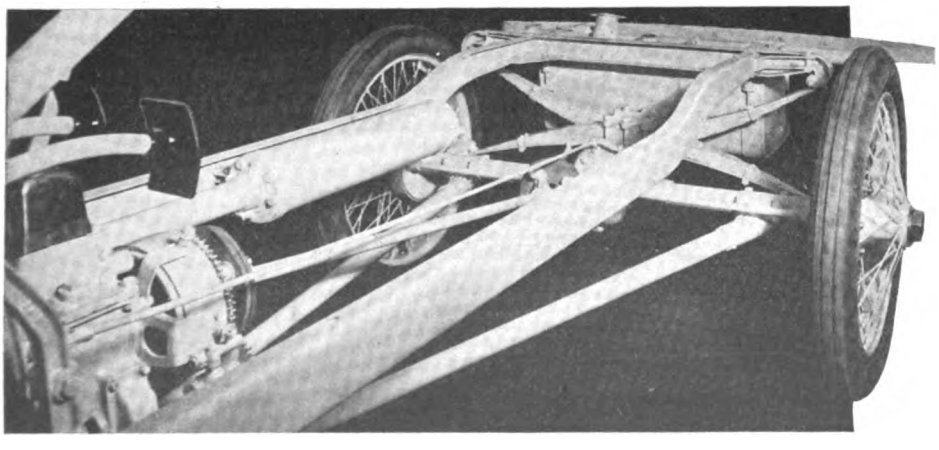
end of the gearbox to points at the extremities of the rear axle housing. In some respects this resembles the Hotchkiss drive, with the addition of the radius members, designed to take the horizontal road shocks instead of allowing them to be transmitted through the spring eyes and shackles.

Heavy volute springs are housed in casings on the under side of the gearbox. Through the inner coils of these springs the radius rod ends are bolted, allowing for a free movement of the rear axle within the limits of the action of these springs. The feature claimed for the drive is that there are no sliding or working parts requiring lubrication and nothing to rattle.

The standard units of which the car is made up include a Buda four-cylinder L-head block standard motor 3¾ x 5½. It is the standard Buda product with full aluminum crankcase and helical gear camshaft drive. The carbureter is a Rayfield 1¼ in., ignition is by the Connecticut system, and starting and lighting are Auto-Lite in connection with a Willard 6-volt 100-ampere-hour storage battery.

The Borg and Beck dry-plate clutch transmits to a Grant-Lees gearbox mounted in a semi-steel case and equipped with S. K. F. self-aligning, double-row ball bearings on both the main and lay shafts. The shafts and gears are nickel steel. The drive is through the flexible coupling and then to a floating axle, which is mounted on Hyatt roller and New Departure bearings. The driving members of chrome vanadium steel and the gears a product of the Brown-Lipe-Chapin organization. The latter are of nickel steel and provide a direct drive ratio in the rear axle of 3.7 to 1. The rear spring is a transverse type.

Gasoline feed is by the Stewart-Warner vacuum system, and Houk wire wheels provided with Silvertown cord 33 x 4 straight side tires. The wheelbase is 112 in.



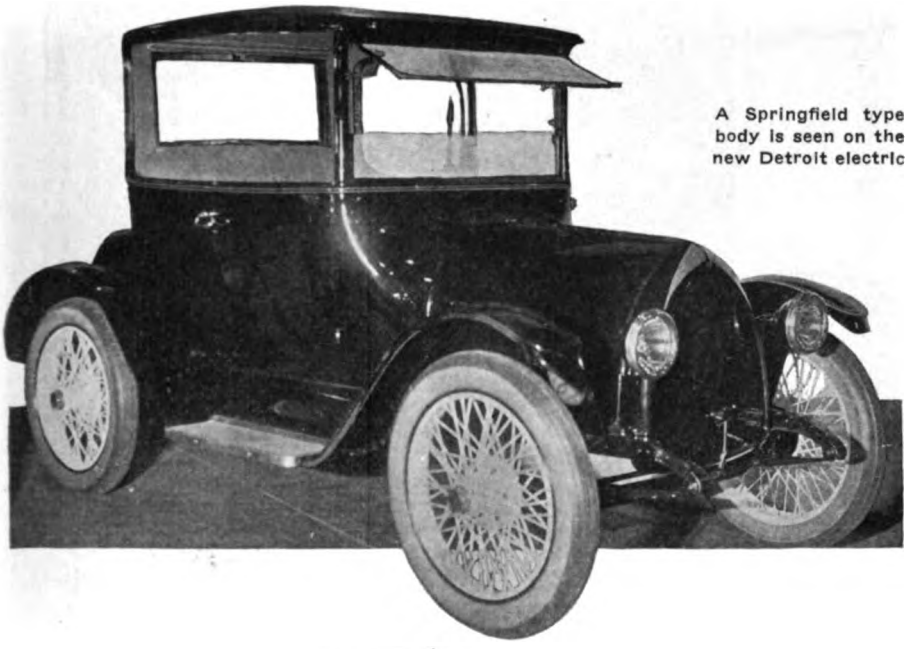
Rear of Hassler chassis showing spring suspension and mounting of radius bars. The transmission brake, the disk couplings and the propeller shaft are also shown

At present a roadster only is mounted on this chassis. It is a roomy style for two passengers with a seat width of 45 in. and a passenger seat mounted slightly behind that of the driver. The body measures 66 in. from the back of the seat to the dash, 32 in. from the front of the seat to the dash, and the doors are 24 in. in width. The car is completely equipped with bumpers as standard and a Boyce motometer and five wire wheels with cord tires included in the purchase price, which is $1,650.

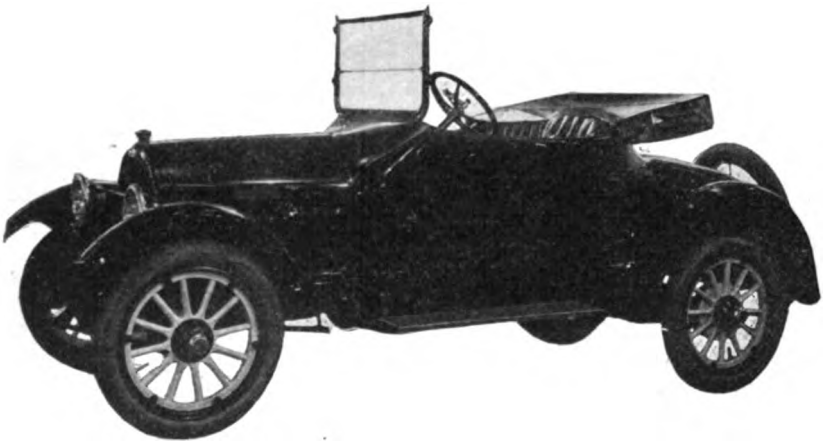
THE Chicago Light Six, made by the Pan-American Motors Corp., Chicago, is fitted with standard parts throughout, assembled in a frame of original design. The power plant is a 3⅛ x 5 six-cylinder Rutenber, with Rayfield carbureter. The gearbox and clutch are a unit with the crankcase, the clutch being a multiple-disk dry-plate type, and the gearset a Warner selective three-speed type. The drive is flexible with both propulsion and torsion taken through the springs, which are mounted directly beneath the main frame members so that in transmitting the drive there is no twisting stress on the frame. The latter has a double kick-up in the rear, giving the car a low center of gravity.

The chassis construction is simple, with the frame wide at the rear, tapering at the center and parallel and narrow at the front. This permits the two supporting points at the rear of the power plant to be mounted directly on the main frame, while providing a wide body mounting at the rear. The rear springs are 57 in. long, semi-elliptic and 2 in. wide. They are underslung, which also has a tendency to lower the center of gravity. The Timken axles have 12-in. brake drums, with the brakes in-

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A Springfield type body is seen on the new Detroit electric



The Stevens light six is assembled from standard parts. It has a Continental 3¼ x 4½ motor

ternal and external operating upon them. The wheelbase is 120 in. and tires 32 x 4.

Gray and Davis electrical equipment is used for starting, lighting and ignition with a Willard battery.

The body is a moulded form with lake blue as standard color. The running gear wheels and windshield frame are finished in white. The price is $1,250, with $75 extra for four Houk wire wheels.

THE Classic, produced by the Classic Motors Corp., Chicago, is an assembled car employing a Lycoming 3½ x 5 four-cylinder engine, Borg and Beck clutch, Mechanics Machine gearbox, Gemco floating axle, Gemco steering, Youngstown radiator and other standard parts. It has a wheelbase of 114 in. and 33 x 4 tires, and is sold completely equipped, plus spotlight and bumper, at $885.

Springfield Body on Detroit Electric

Of the new bodies probably the most distinctive is the Springfield type on one of the Detroit electric exhibits. This is an adaptation of the Springfield convertible principle incorporated with the brougham style. With the rounded front hood the car resembles a gasoline product quite closely. The part corresponding to the radiator has a high-dome crown effect very similar to the latest type of gasoline car front ends. This new body is fitted to the model 69 and sells at $1,775.

Scripps-Booth Has a New Body

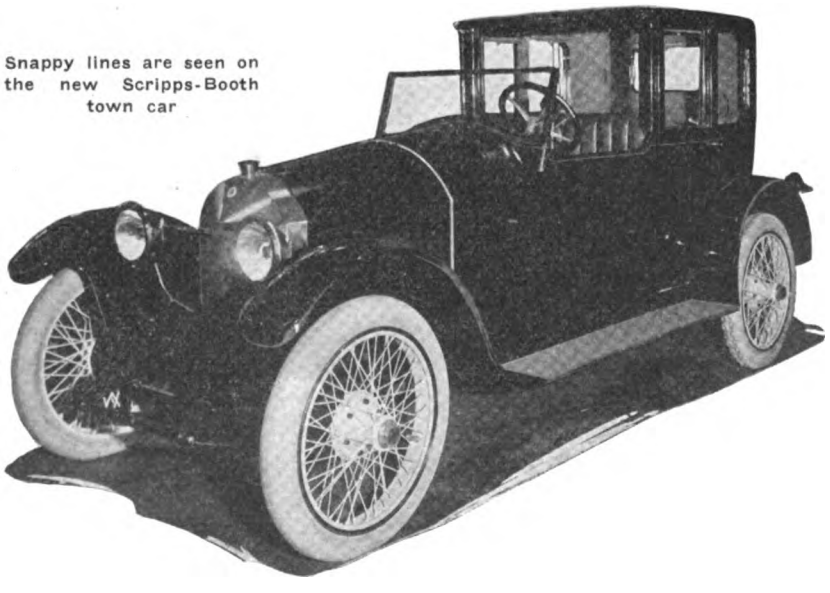
A new town car shown by Scripps-Booth is a limousine style with the top over only the passenger compartment. It is fitted with a sloping windshield and the body line from the dash to the rear of the front compartment drops slightly below the line of the passenger entrance door. The trimming and upholstery are leather in the front compartment and cord for the closed compartment. The body is relieved by a white trimming line at the point of juncture between the hood and the cowl. There is also a white stripe over the top of the cowl and along the side line extending around the body.

Ohio Electric Shows New Model

The Ohio electric is practically the same as its predecessor, model 43, but has been reduced in price from $2,900 to $2,380 due to its greater standardization in manufacture. The cut in price has been possible largely because of the reduced number of options allowed. In the previous model it was customary to give an extremely wide range in upholstery and color, but now only three colors are optional and four styles of upholstery. The colors are Ohio grey, Ohio blue and Roadster green.

Glide Raises Price

The Glide price has been raised from $1,125 to $1,250. This car is assembled from units such as the Rutenber 3⅛ x 5 six, Brown-Lipe gearbox and differentials, Westinghouse electrical equipment, Stewart vacuum system, etc. The body is roomy, having a 47-in. rear seat and a 42-in. front. It is finished in meteor blue with black running gear. Wheelbase is 119 in. and the car is provided with 34



Snappy lines are seen on the new Scripps-Booth town car

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x 4 tires. A detachable sedan top is provided for $200.

Monitor Has Standardized Chassis

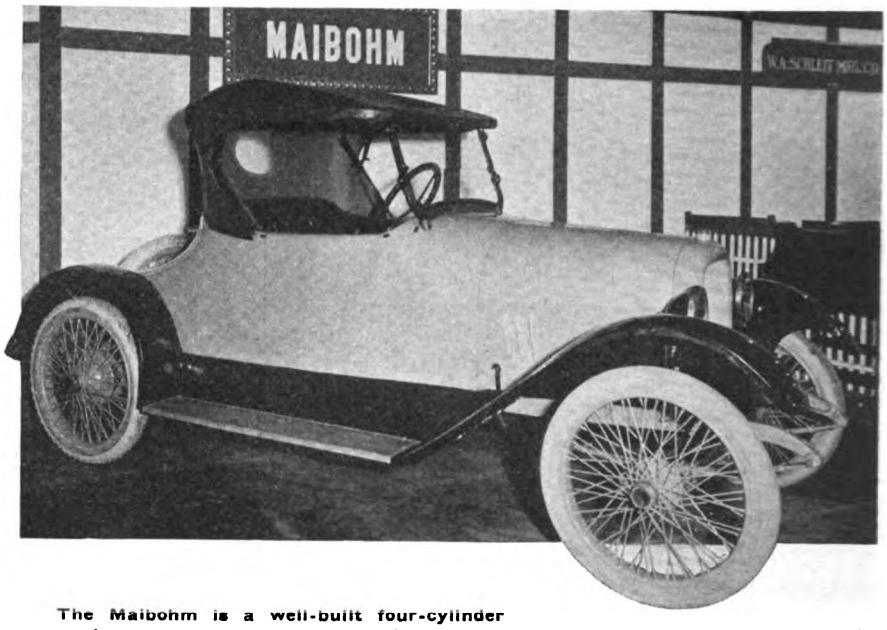
Two Monitor chassis are exhibited, one a four and the other a six, with many of the parts of the two interchangeable. The motors are a six-cylinder Continental 3¼ x 4½ for the six, and a four-cylinder Golden Belknap and Swartz for the four. The electrical equipment is Heinze, the carbureter for the six a Stromberg and the four a Schebler, and the chassis parts are standard ones. The wheelbases are 110 and 117 in. for the four and six, respectively.

Many Outside Exhibits

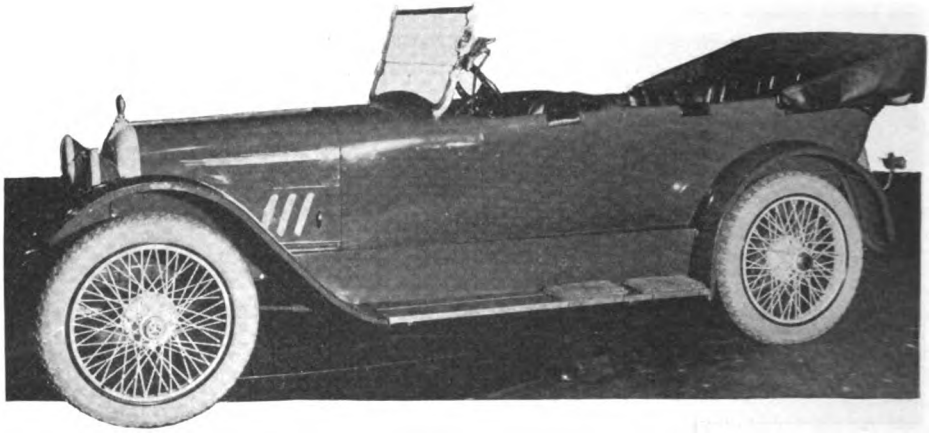
Some of the companies which were not able to obtain space at the show are exhibiting outside. Across the street from the Coliseum the Comet Automobile Co. has its double-cowl touring car. This concern has its home in Decatur, Ill., and is showing a car with a six-cylinder 3⅜ x 5 block motor with Delco ignition, Dyneto starting and lighting and Zenith carbureter. The clutch is a Borg and Beck, springs are cantilever, 50 in. in length, and the car sells for $1,185.

Columbia at Hotel Show

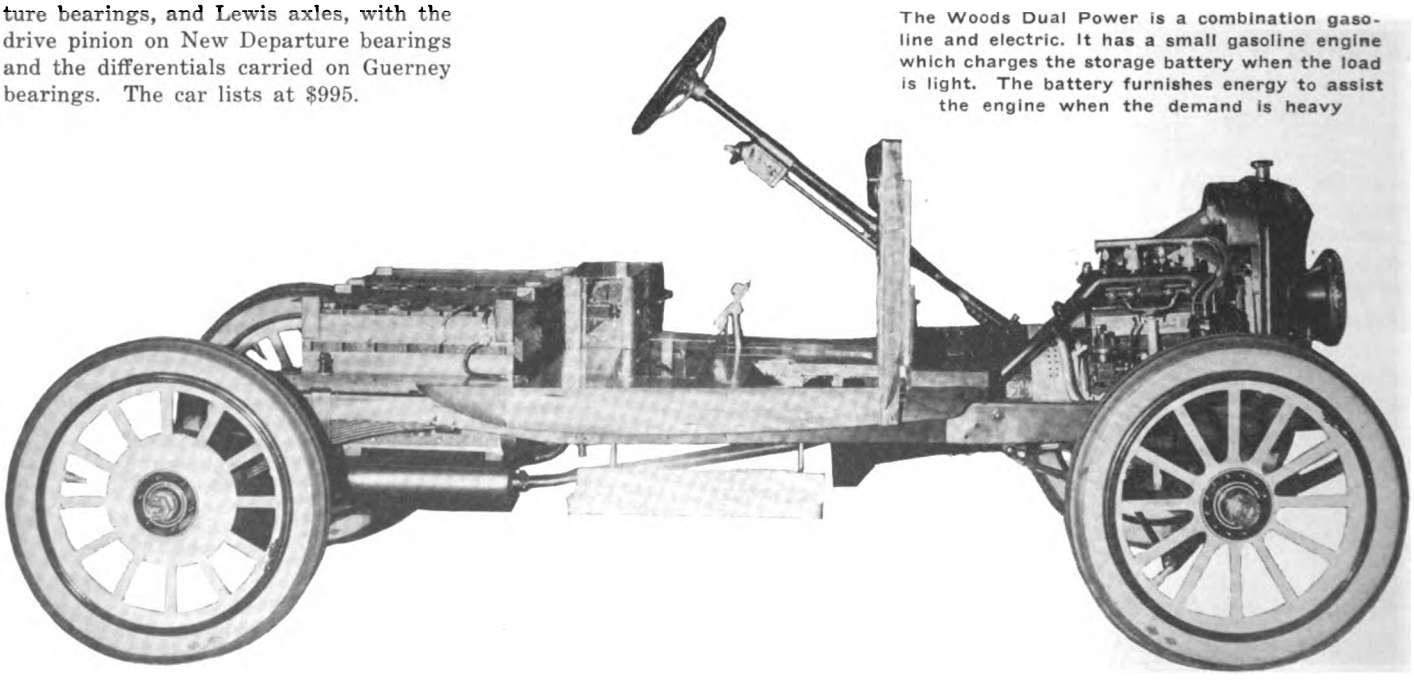
At the New Southern Hotel is the Colonial, made by the Colonial Automobile Co., Indianapolis. This is an assembled six with an overhead-valve engine, operated by exterior pushrods and rocker arms. Over the head of the engine is a detachable cover plate, and the priming cups are in the sides of the cylinders. The wheelbase is 116 in. and the chassis construction is simple, with a drop frame and cantilever springs. Components are inverted cone clutch, three-speed gearbox with New Departure bearings, and Lewis axles, with the drive pinion on New Departure bearings and the differentials carried on Guerney bearings. The car lists at $995.



The Maibohm is a well-built four-cylinder roadster with fine lines and fine finish



The Elgin light six is a good example of modern body design



The Woods Dual Power is a combination gasoline and electric. It has a small gasoline engine which charges the storage battery when the load is light. The battery furnishes energy to assist the engine when the demand is heavy

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16 More New Accessories

Revealed at Chicago Show

1—Stewart-Warner Drive
2—Dixon's Non-leak Grease
3—New Badger Jacks
4—Protector Spark Plug
5—The Motor Eye
6—Burg Pin Puller
7—Lipman Air Station
8—Electric Valve Grinder
9—Solar Duplex Headlight
10—Oakes Kranklock
11—Shakespeare Fittings
12—Vesuvian Heater
13—Vesta Searchlight
14—Steel Brake Shoes
15—Sexton's Castor Oil
16—Easyon Tire Chains

Stewart Warner Speedometer Drive

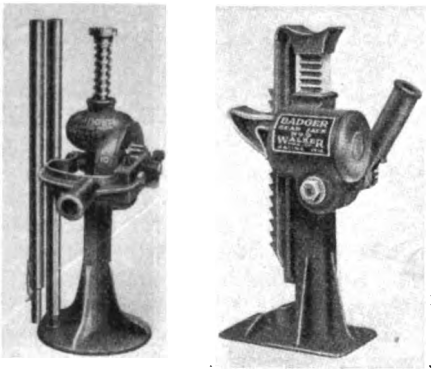
The feature of this speedometer drive is that it employs a spiral gear completely inclosed and mounted at the rear of the gear box. It may be placed on any standard gearbox and requires no mechanical changes in construction. Due to the inclosed feature the gears run in oil and all dust is excluded. Two new speedometers with extra large odometer figures are also offered. A feature that is incorporated is a novel odometer resetting device, operating the same as the reset device in a stem winding watch. A knurled knob mounted at the right of the speedometer case is pulled out and the odometer figures reset in an instant.—Stewart Warner Speedometer Corp., Chicago.

Dixon's Non-leak for Fords

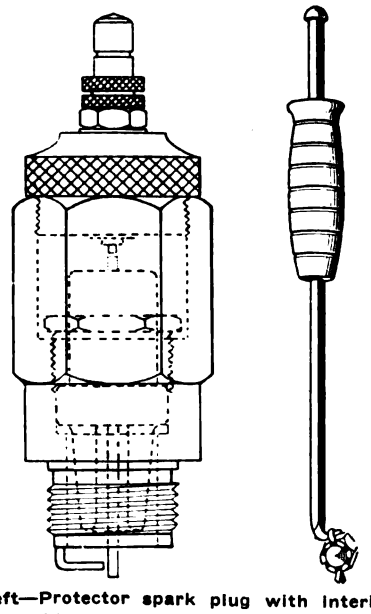
This graphite grease is compounded for the Ford differential, and is said to prevent leakage. It is packed in a 2½-lb. can, which is just enough for one Ford differential for one season. Price, 85 cents.—Joseph Dixon Crucible Co., Jersey City.

New Badger Jacks

Two new styles of jacks are shown, one a screw type and the other a gear type. The screw jack is of the conventional type driven by two pawl-operated bevel gears, the features being a thumb nut that allows a speedy adjustment up or down, and a long-jointed handle permitting the jack to be readily operated. Price, $4.50. The gear jack is combination worm-and-gear-driven, giving an extreme leverage with a small pressure.



Two new Badger Jacks. Left—Screw type. Right—Gear type



Left—Protector spark plug with interior gap which acts as an intensifier. Right—Burg cotterpin puller

Quick raising or lowering is effected by revolving the handle all the way around. The worm is said to lock the jack, making it impossible for the rack to drop under load. A two-piece 20-in. handle is included. Price, $8.50. — Walker Mfg. Co., Racine, Wis.

Protector Spark Plug

The porcelain of this spark plug is completely housed in a metal bushing that is covered at the top by a horn fiber cap. This cap carries the secondary terminal and leaves a gap between the terminal and the electrode, acting as an intensifier and producing a much hotter spark. The firing points are nickel-alloy steel, made in one piece without welding. Price, $1.50.—The Wales-Adamson Co., 1402 South Michigan Avenue, Chicago.

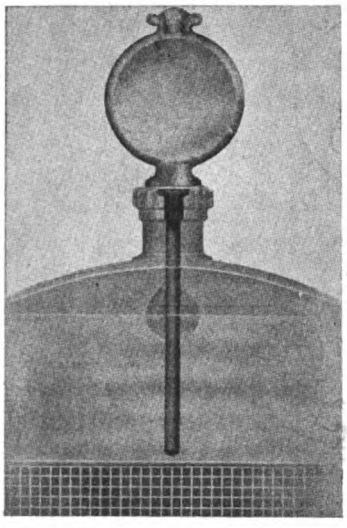
Motor Eye

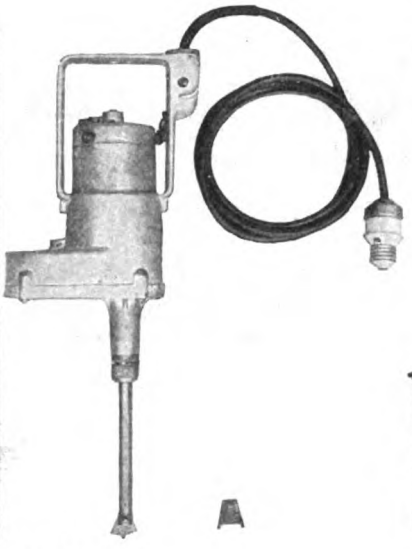
A thermometer operating under water within the radiator and registering in a disk placed on the top of the filler cap gives the temperature of the cooling water. It is made in a variety of types for use on the different makes of cars, and in the standard type with a round dial, which sells for $5.—Metalware Corp., Chicago.

Burg Cotterpin Puller

The handle on this cotterpin puller slides along the shank in a manner that permits the pin to be removed by impact after hooking into its eye. The tool consists of a short steel rod about ¼ in. in diameter having a small hook at one end, carrying a sliding handle and headed

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Above—The Motor Eye registers the temperature of the cooling water. Right—Jackson electric valve grinder which may be operated from any lamp socket



The Lipman Free Air Station is designed to draw trade

at the opposite end. It is said that it will remove practically any pin used on cars, and is also useful in spreading cotterpins when replacing them. It is made in two styles: black finish, $1; nickel-plated, $1.25.—Wales-Adamson Co., 1402 South Michigan Avenue, Chicago.

Lipman Air Service Station

A curb air compressor system for supplying free air to the motorist. The station resembles a curb gasoline pump and comprises a cast iron base holding a electric motor and a four-cylinder air compressor, directly connected to 28 feet of hose contained in a compartment just above the base. The hose is reached by a hinged door and when the door is opened the compressor is automatically started. Closing the door stops it. A large 14 in. opaque electric light globe is mounted at the top of the column, about 9 ft. above the street, and contains the words "Free Air." Price, $105. —Lipman Air Appliance Co., Beloit, Wis.

Jackson Electric Valve Grinder

This portable motor-driven tool for grinding poppet valves comprises a vertically-mounted electric motor driving the valve-grinding head with a "back-and-forth" movement by means of a gear, connecting-rod and offset crank. The tool is made in two sizes, No. 1 for valves up to 2¼ in., driven by a 1/10-hp. motor and particularly adapted to service-station work, and No. 2 for continuous heavy-duty manufacturing purposes and will grind valves up to 4 in. in diameter. It is driven by a ⅛-hp. motor.—Wales-Adamson Co., 1402 South Michigan Avenue, Chicago.

Solar Duplex Headlight

Two lights are incorporated in one in this headlight. The upper one is for country driving, and resembles the standard headlight; the lower is similar to a side light, and designed for city driving. The large light has a reflector of 9½ in. diameter and is fitted with clear glass and an 18-c.-p. bulb. The small reflector is 3½ in. in diameter, fitted with a dimming lens and a 12-c.-p. nitrogen bulb. These lamps are made for practically any electrical system and to fit on any car. They are finished in brass, in black, or nickel and black. The price per pair is $20.—Badger Brass Mfg. Co., Kenosha, Wis.

Oakes Kranklock

This is a combination license holder, crank holder and car lock. The device is a metal bracket, at the lower side of which is a cross-bar carrying the license and at the upper end a pair of hinged fingers that swing out and hold the starting crank in the vertical position. The ends of these fingers are drilled so that the crank may be padlocked in place. To install, the two front spring clip bolts are removed and the bracket bolted to them. The price is $1.—Oakes Co., Indianapolis, Ind.

Shakespeare Carbureter Fittings

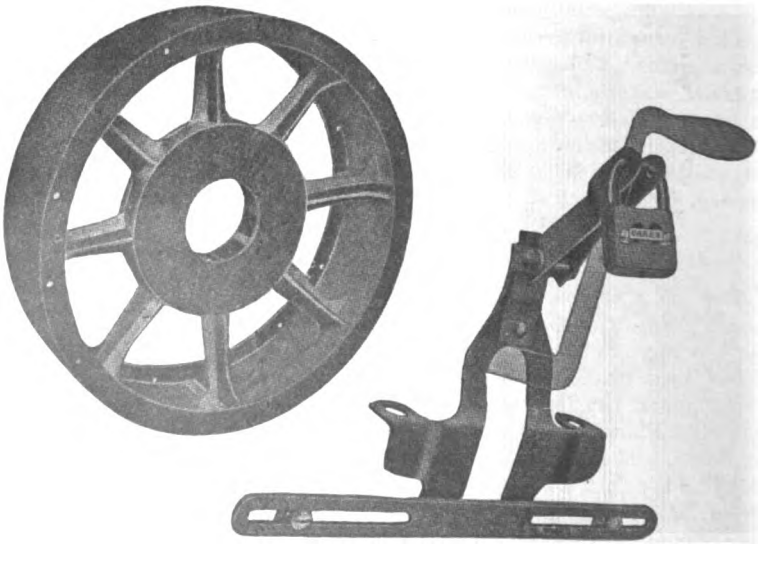
Complete fittings are now offered for all carbureters, consisting of a lever for operating the primer and temperature control, mounted either on the dash or steering column, and a warm-air stove for attachment to the exhaust pipe. Sufficient flexible hose is supplied for connecting the stove to the carbureter. A feature of the controlling lever is that it may be set in any position to suit the running conditions. The price of the steering-column control is $2, the price of the cowl-dash control is $1.50, and the price of the stove is 50 cents.—The Shakespeare Carbureter Co., Kalamazoo, Mich.

Vesuvian Heater

This exhaust heater is steel throughout. It comprises a heating chamber which is made of thin steel and has several steel vanes that deflect and mix the gases so that all heat is absorbed. The outside of this chamber carries several steel radiating fins, and the entire heating element is mounted in a pressed-steel case beneath the radiator, that is set flush with the floorboards. After passing through the heater the exhaust gases are carried downward and outward through the rear of the car. Price, $15. —Reliable Auto Heater Co., Cleveland, Ohio.

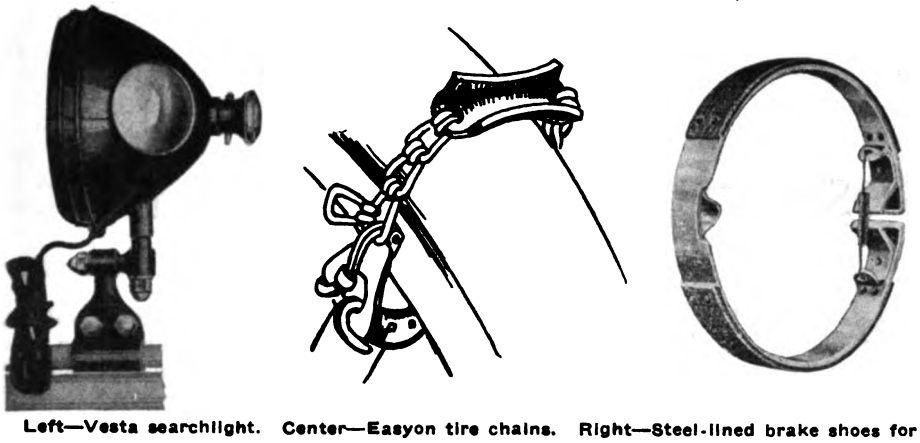
Vesta Searchlight

This searchlight incorporates a mirror, a Cutler-Hammer switch located in the



Left—West Cast-steel wheel. Right—Oakes Kranklock for Fords

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Left—Vesta searchlight. Center—Easyon tire chains. Right—Steel-lined brake shoes for Fords

handle, and a rack designed for the car to which it is to be attached. The body of the lamp is heavy-gage steel and may be enameled in any color to match the finish of the car. The mirror is a three-eighths-convex condensing type and is placed so that it can be quickly focused to obtain a rear view. The reflectors are brass, silver-plated, and all lamps are equipped with Mazda nitrogen-filled bulbs. Price, 7¼ in., finished in black, $8; finished in nickel with brass doors, $8.50; finished in any color, $2 extra.—Vesta Accumulator Co., 2100 Indiana Avenue, Chicago.

Steel-Lined Brake Shoes for Fords

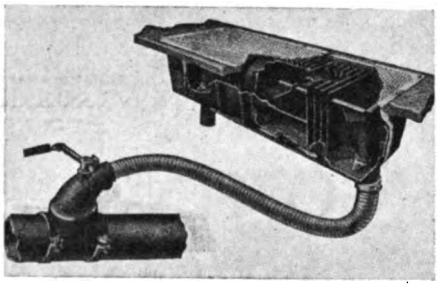
These brake shoes for Fords are steel throughout. The features of the steel construction are increased strength, resiliency, ease of relining and lightness. The shoes are packed in cartons containing one complete set, including springs. Price, $2.—The Humboldt Machine & Stamping Co., Long Island City, N. Y.

Sexton's Castor Motor Oil

A patented compound containing pure vegetable castor oil combined with mineral and other vegetable oils for engine lubrication. This oil is said to give all the advantages of a pure castor oil and a reduced cost. Special combinations are offered suitable for every type of engine and the company offers a booklet telling which oil mixture is suitable for each motor.—The Sexton Oil Co., Chicago.

Easyon Chains

Individual cross non-skid chains are secured to the wheel spokes. Each consists of a gripping member that is a half-hourglass section and held to the tread of the tire by chains attached to a spoke. This gripping member is so formed that it does not tend to cut the tire. The fasteners on the spoke are leather-covered. Another feature is the method of attachment to the spoke, this being done by a snap catch that may be fastened or removed in an instant. Four chains are necessary for each rear wheel and the sets are made in three sizes. The prices are: 3 to 3½ in., $3 per set; 4 to 4½ in., $4 per set; 5 to 5½ in., $5 per set.—Woodworth Mfg. Co., Niagara Falls, N. Y.



Vesuvian exhaust heater, which is operated by the exhaust. There are several vanes to deflect the gas

The Heco Vacuum Feed

This is a gasoline-feed system operated by suction from the intake manifold. The system is embodied in a small tank placed beneath the hood and located on the fuel line between the main gasoline tank and the carbureter. Suction draws the gasoline from the main tank into the vacuum tank, and it is fed from there by gravity to the carbureter. The tank proper has an upper and lower chamber, the upper containing a control mechanism and the lower acting as the gravity feed tank. These two chambers are separated by a metal partition carrying the valve mechanism and valve. This valve controls the flow of gasoline from the upper to the lower chamber and is actuated by a float. The feature of this system is the one valve construction and the mechanical operation. It may be installed on any car. Price, $8.—Heinze Electric Co., Lowell, Mass.

West Cast-Steel Wheel

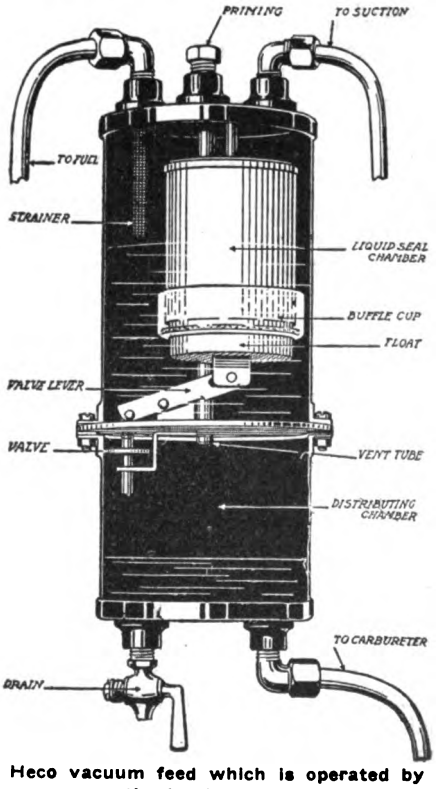
One-piece cast-steel truck wheels designed to replace wooden wheels are offered. These wheels are said to be lighter than wood and to possess none of the disadvantages of the wood construction. They are not affected by climatic changes, and are guaranteed for the life of the car. Either pressed-on or demountable tires may be used. The price is $30 to $40 per sent of four.—West Steel Casting Co., Cleveland, Ohio.

Bosch Holds Western Conference

CHICAGO, Jan. 29—The Bosch Magneto Co., New York, held a convention and conference of its sales and executive force during the Chicago show, Bosch distributers and service station men from all over the country being present. Addresses were made by a number of the factory executives. Among those present were: Distributers—N. F. Ozburn, Memphis; E. H. Baughman, Atlanta; J. F. Shuford, St. Louis; R. J. Hundhausen, St. Louis; Chas. Parker, Minneapolis; Alex. D. Robertson, Minneapolis; O. Lemke, Milwaukee; G. F. Beach, Kansas City; O. Wittmann, Kansas City; L. L. Wissler, Des Moines; C. G. Powell, Omaha; C. Wilkening, Philadelphia; F. Wilkening, Philadelphia; Wm. Oskamp, Cincinnati; D. Peterson, Salt Lake City; Chas. Spoerer, Baltimore; Lynn Dix, Pittsburgh; Chas. A. Butzow, Sycamore; Henry G. Butzow, Sycamore; E. R. Seager, Cleveland; A. J. Jackson, Hutchinson, Kan. New York: A. H. Altree, V. W. Kliesrath, A. H. Bartsch, G. Lang. Chicago: F. D. Norman, P. Furrer, Wm. Brown, C. Gruener, E. J. Swanstrom, P. R. Klette.

Cadwallader Heads Seneca

FOSTORIA, OHIO, Jan. 12—At a meeting to-day of the Seneca Motor Car Co., formerly the Fostoria Light Car Co., Ira Cadwallader was elected president, Charles Ash vice-president and J. H. Jones secretary-treasurer, with Alexander Kiskadden of Tiffin, P. H. Brown of Toledo and C. D. Whitelaw of Findlay as directors.



Heco vacuum feed which is operated by the intake suction

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The Second of a Series—

The Man Whose Head Was Half Hat

By Ray W. Sherman

THE hat wasn't so bad. There have been hats a lot worse. And the man wasn't so bad. There have been men a lot worse. He was a fairly good looker and his face had been shaved that morning—which may or may not have been an event in his young life.

He stood in the Congress exhibit at the Middleport show, and from the general layout of things it seemed safe to assume that the Congress dealer believed he had good looking cars, had therefore staged a pretty exhibit and was in hopes of getting some good results out of the show. It also seemed safe to assume that the young man who ornamented the foreground was carried on the payroll as a salesman.

He stood be-hatted in the midst of the scenery as one of the elite of the town approached, a youngish woman, accompanied by a man.

Offhand, Reilly and Tommy Trumbull picked them for off-shootings of families that had made good in the town's business world and who were not out to go the Old Man one better in life. They certainly looked like ready money.

The salesman-appearing young man waited until they reached him. Then he said:

"Good evening!"

The young couple said "Good evening" and the young man with the young woman raised his hat.

The salesman touched the front of his, but it stuck to his head for some reason or other and it wouldn't come off—the hat, not the head.

Then the young man and young woman talked for a while, the young man meantime holding his hat in his hand. The salesman's hat still stuck to his head, as though it were a part of that section of his anatomy.

"It has been done for years," said Reilly, "and it probably will be done for many years more, but it shouldn't be done at an automobile show. That lad lacks in his salesmanship, for the first qualification of a salesman is being a gentleman. He simply doesn't know how."

"Maybe his head's cold," suggested Tommy.

"Not in this show, it isn't," retorted the Sennett dealer. "It's warm enough here to go without a coat and vest. That young lad is simply a professional hat-wearer. He is not unlike that type which likes to go around all the time with the coat collar turned up.

"The shows have always seen many of this kind of salesman, Tommy, ever since I have been in the motor car business, and that is why I have always asked you boys to be especially particular about some of these little details such as hat wearing when on duty. Doing things the right way makes us conspicuous when so many others are doing it the wrong way.

"I have always tried to build class and atmosphere about my business in Callawassa, and have tried to create the impression that the Sennett was a car for people of class, all of which doesn't prevent it being owned by people who may be said not to have class. The price is also a thing in its favor, for it puts class within reach of the man of moderate means. I have built the class and the factory has made the price.

"But now, what would a person of class think of us if he or she were to come into our exhibit, as has just happened in this Congress exhibit in front of us, and you were to talk to the visitor with your hat on? And what would this young salesman think of a man who entered the salesman's home and talked to the salesman's mother or sister without removing his hat? He would class him as a very much uneducated individual.

Yet this is practically what has happened here. This woman and man, who from their looks seem to know what's what, have entered this exhibit and the salesman hasn't removed his hat. He admits by that half-hearted movement of his hand toward his hat that he perhaps realizes the hat shouldn't be there, but he isn't thoroughly enough schooled in salesmanship to know that the hat absolutely MUST BE OFF when he is talking to any one, and especially to a woman—a well-dressed one.

"These people didn't talk to the salesman very long. Why they did not I don't know, but it is safe to assume that they feel the lack of courtesy on the young man's part. They must notice it, for the man with the woman held his hat in his hand when talking to the salesman—which is sometimes done these days in the best families.

"In the Pierce-Arrow exhibit at the New York show you might not find this, for New York Pierce-Arrow owners are in a class by themselves, but in places where it is the least expected this hat-wearing bobs up. In big cities and small it exists. In the big cities you would least expect to find it, but it is found there nevertheless.

"You would think dealers and salesmen would be alive to the opportunity for making money that lies in a little thing like this. Failing to remove your hat when talking to a prospect may set that prospect against you, and to a dealer that may mean two or three hundred dollars. It may mean a great deal to a salesman.

"It is not especially intensive or modern merchandising, Tommy. It is plain common sense—which, by the way, is exceedingly uncommon. Dealers would do well to study their organizations and see how many rough edges of this kind they can discover.

"As to wearing hats when selling cars indoors it isn't a question of REMOVING the hat; it is a question of KEEPING THE HAT OFF ALL THE TIME."

COMING

Feb. 7—The Man Who Never Knew a Lady ◈ ◈ ◈

Feb. 14—The Man Whose Legs Were Wood ◈ ◈ ◈

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He stood be-hatted in the midst of the scenery. "Maybe his head's cold," suggested Tommy. "No," retorted Reilly, "that lad is simply a professional hat-wearer."

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San Francisco's Row

REFINEMENT in the fiery furnace has given the Pacific Coast the world's finest motor car row. Van Ness Avenue in San Francisco, the chief seaport and the metropolis of California and the Pacific Coast, the tenth city in population in the United States and the largest and most important city West of the Missouri, has been built into the most beautiful, the most imposing and the most lasting motor car row.

It is only 11 short years since earthquake and the scourge of fire wiped out the business section of San Francisco, and with it what there was of an automobile row—wiped them out as completely as chalked buildings are wiped off a blackboard.

Yet in the short space of time between 1906 and 1917, San Francisco dealers have built up a motor car row that surpasses Chicago's famed Michigan Avenue, that eclipses New York's beauteous and whited way, that puts prim Boston's Commonwealth Avenue in the shade.

Van Ness Avenue is in the very heart of the pulsating life of the Pacific Coast's greatest city. When the earth trembled sending great buildings tumbling about their foundations and the fire started, it crept steadily through the business section, eating its way along and across Market Street, the Broadway of San Francisco, to the boulevard of the city—Van Ness Avenue.



Van Ness Avenue, San Francisco's Automobile Row, stretches from lined both sides with the finest salesrooms and service stations in section of the city and the homes of the business men. It is a

Here the fire was stopped, leaving on one side the great residential section of the city, and on the other the burned and blackened ruins of the business section.

To-day Van Ness Avenue is in the very heart of the city—on one side the rejuvenated business section though swept clean of its motor car row, and on the other a residence section containing the finest homes in the city.

And it is on this broad artery of commerce that San Francisco's motor car row has been built up.

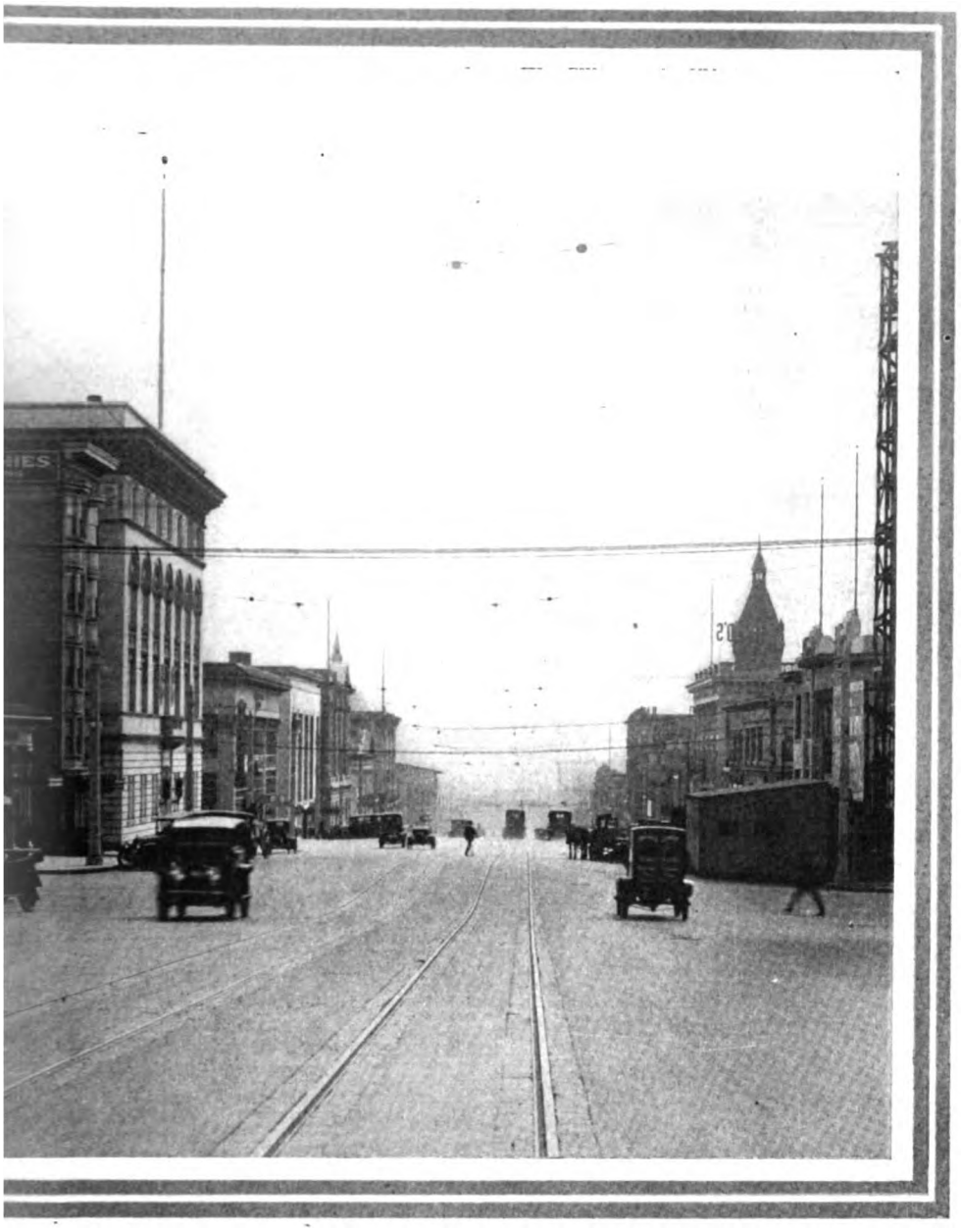
Van Ness Avenue stretches from the Exposition grounds, grouped at the waterfront, 21 blocks to Market Street, a broad, rolling boulevard beautified by the modern salesrooms and service stations. Here are congregated 45 dealers representing as many passenger car and truck factories.

San Francisco dealers have built on the foundation of their earlier experience and with the acrid smell of smoke in their nostrils. Every building is a monument to its builder and will stand long after its designer has passed on.

Stone and steel have been lavishly used in the building of this row. Wooden structures, mere

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The World's Finest



the exposition grounds for a distance of twenty-one blocks and is the world. The row is the dividing line between the business broad, asphalted boulevard, the pride of the city and of the West

flimsy shells that they were, are no more, and from the ashes of the old row has sprung up a group of buildings unexcelled as salesrooms, as service station, as places of business.

All of these buildings have been built especially for their occupants and for the specific purpose of the retail motor car industry. They reflect the experience of their designers in the growing trade of the Coast; in them, the country has the most modern of its motor car buildings.

When the great fire gutted the business section, business men, driven out, at first congregated on Golden Gate Avenue, and here there sprung up a mushroom motor car growth. This was during the rehabilitation of the business section. Many of the big industries moved into what remained of the palatial residences on Van Ness Avenue and into temporary structures put up over the wreck of the old ones.

Early in 1908 when the business section had been rebuilt to a sufficient extent, Golden Gate Avenue began to be deserted, though many modern motor car buildings sprung up there and remain to make a row supplementary to the main row, and Cuyler Lee, now Packard and Maxwell distributor for northern California, sensed the advantage of locating on Van Ness Avenue and erected a modern fireproof building fully 15 blocks away from what was then the center of the motor car row. His move was regarded as suicidal, but one by one other dealers flocked around him until Van Ness Avenue now is lined its length.

And if nature was unkind to the building Pacific Coast motor car industry when she drove it out with a fiery brand, she has been kind to the industry in the end. She has so arranged the hills and valleys that more than half the salesrooms and service stations can be built on a hill. Thus has the apparently impossible been achieved, and a dealer given a building with two ground floors—one with an entrance on one street and the other with an entrance on a side street—one entrance for his salesroom and a separate entrance, equally as easy of approach, and on another floor, for his service station. These modern service stations, in fact, might well be termed buildings built on a hill.

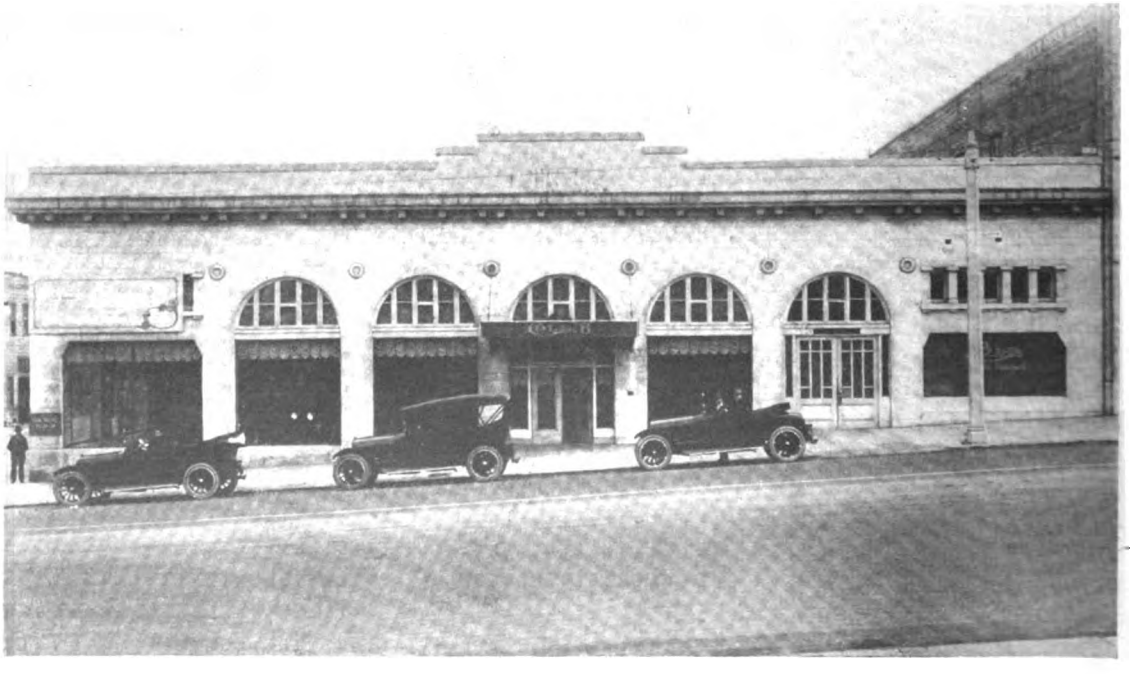
Service should be highly developed and organized in these San Francisco buildings for the advantages of building on a hill are many. What wise student of real estate was it who said: "Build high; there is only one ground rent to pay?"

With two ground floors equally as accessible, the dimensions of the (*Continued on page* 33)

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The newest building on the row is that of the Willys-Overland of California—a $450,000 building. The structure is the largest, most completely equipped automobile service building west of Chicago. It was designed especially to render the best possible service. The building occupies half a block and has a floor space of 145,000 sq. ft. The construction is of fireproof, reinforced concrete. The building is five stories with basement and the roof has been tiled and inclosed with a 5-ft. wall so that it may be used for testing cars and as a playground for employees during the noon hour. The fifth floor is the paint shop, upholstery shop, and the experimental shop. On the fourth floor are the general offices. Here too is a large auditorium where the men and women of the organization can gather to hear talks on business. On the third floor is the repairshop, the tool room and the blacksmith shop, where there are forges. On the second floor is the quick service department. It is connected with the street by a 20-ft. runway with easy grade. On the first floor are the treasurer's and sales manager's offices, the accounting department and parts department.

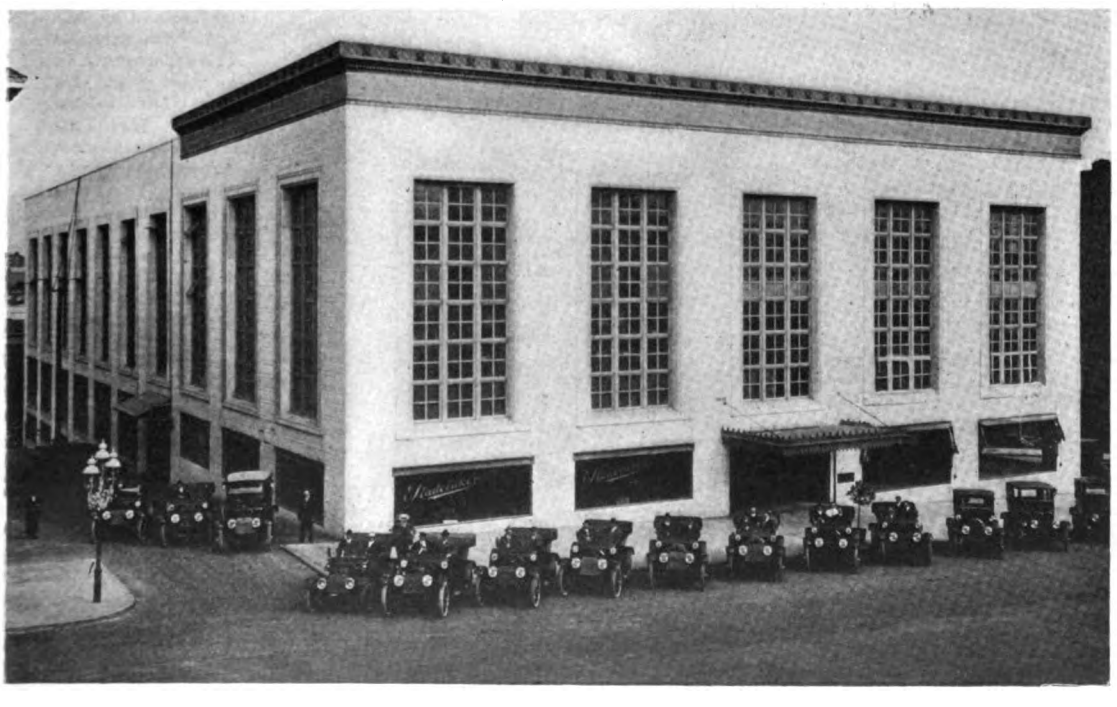


The Cole Pacific Co. has its salesroom at the far end of Van Ness Avenue. The showrooms are 75 x 100. The service station is adjoining the salesroom. The Cole Pacific building has better selling and demonstrating facilities than any other in the city.

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Cuyler Lee, who earned the distinction of converting Van Ness Avenue into automobile row, has a three-story building with an unusually high ceiling over the first floor. This building was the first concrete automobile structure in San Francisco, and was built in 1908. It was designed to give the best of service rather than for magnificence. Salesrooms are 100 x 50 on the corner of Van Ness Avenue, with windows all the way round. In the rear is the service department which covers about twice the floor area of the showrooms. The parts department and the clerical force are on the mezzanine and the shops are on the second and third floors. In the basement the Packard and Maxwell commercial vehicles are stored. Cuyler Lee has outgrown his present quarters and has rented an annex of 100 x 100 next door, which he uses for the storage of new and used cars. The service station is reached directly from the street. When the Lee organization moved to Van Ness Avenue in 1908 five persons were employed. The firm now pays 117 people.

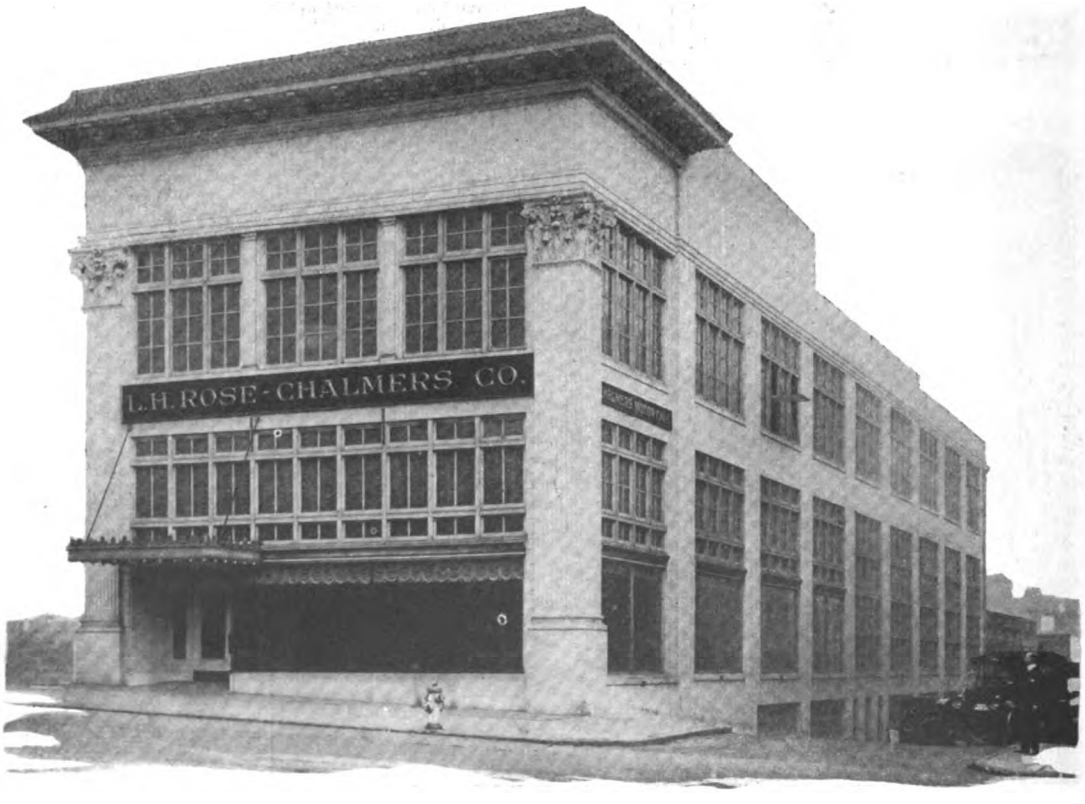


The H. O. Harrison Co., distributer of Dodge, Hudson and Peerless, and the Studebaker Corporation jointly occupy the four-story building. Each firm has an equal part of the structure. Harrison has divided his part of the building into a handsome showroom on the main floor, and parts, service and painting departments on the other floors. The general offices are on the mezzanine. The service department, in the basement, runs even with the street on one side of the building, and is divided into three separate parts—one for each of the lines he represents. The Studebaker portion of the building is divided like Harrison's, except that the lower floor has been turned over to the Chester N. Weaver Co., local Studebaker distributer. The Weaver salesroom is 100 x 100.

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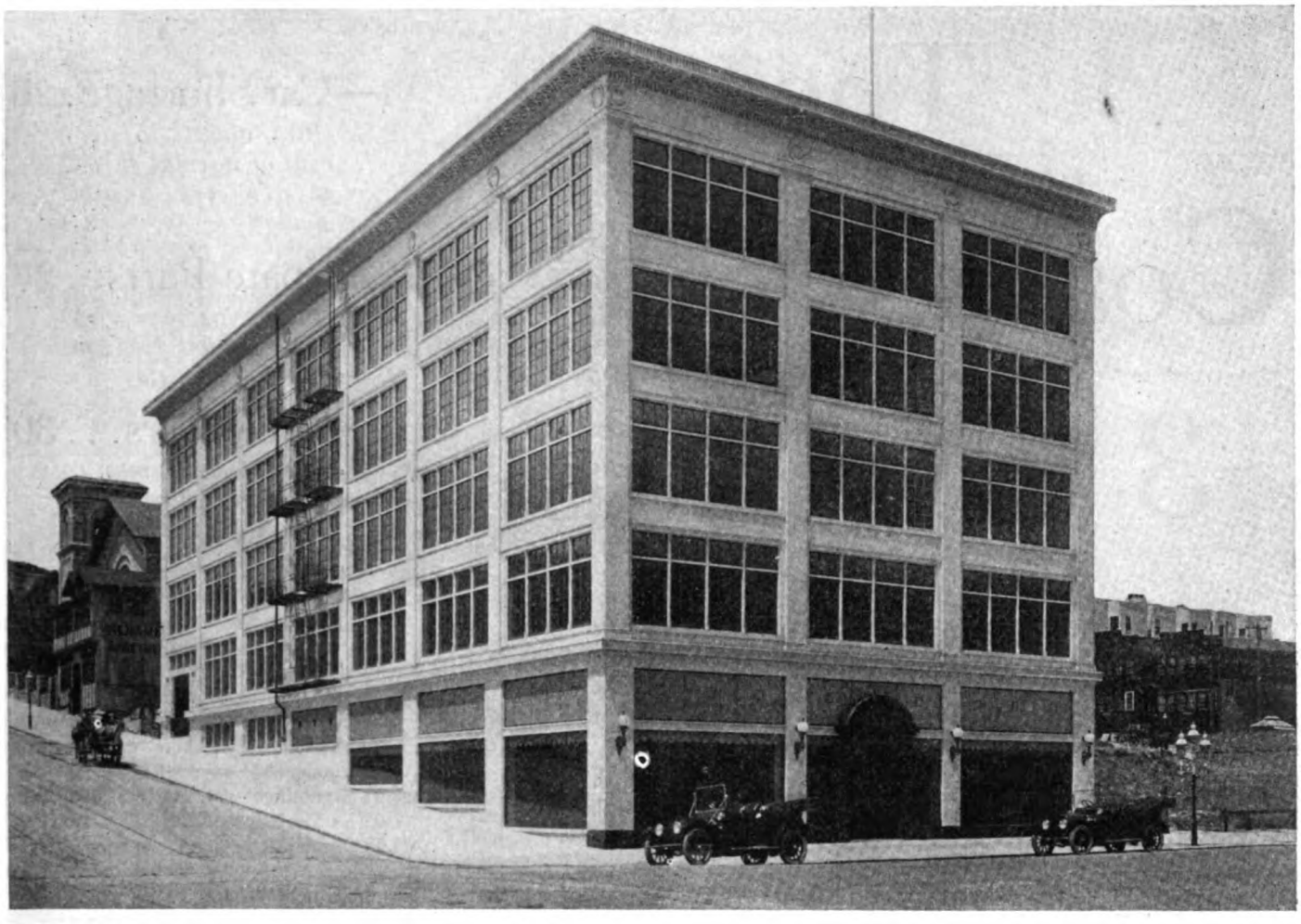


The Pierce-Arrow Pacific Sales Co., a subsidiary of the Buffalo factory, has one of the most attractive buildings. The structure was built especially for the company. The floor of the salesroom is fancy brick, which gives the room an unusual appearance and sets the cars off as though they were standing on a well paved boulevard. The service station is in the rear and reached directly from the street. There is no incline. The upper floors are used for parts department and machine shop. The executive offices are on the second floor and are beautifully fitted up.



The L. H. Rose-Chalmers Co. has made an enviable record for itself in the past year. Its sales have been brought from almost a negligible quantity to a record amount. The company has attractive salesrooms. One side of the building is on an alley, so that the service department is easily reached from this side of the building. The salesroom is 50 x 75 in the front of the building. The service department is in the basement, reached by an inclined runway from the street. The shop and mechanical departments are on the second floor.

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The Don Lee building is on a corner and is one of the most attractive establishments on the row. Its particular charm lies in its salesrooms, which are handsome and tastefully designed. The main salesroom, 80 x 103, fronts on Van Ness Avenue. The floor is mosaic. The walls are a blending of blue and gold, and comfort is the keynote. It is a place you would like to go into and gossip for a while. Don Lee figures that when a prospect gets to the salesroom and finds there is a comfortable place to sit and view the cars he will be induced to buy. Don Lee's policy has borne fruit because his sales prove it. In the rear of the main floor are the general offices and used car department. The parts department is on the mezzanine. Here is also sold a complete line of motor accessories. The service station on the second floor is reached from the side of the building by an inclined runway. A freight elevator connects with the three upper floors, on which are located a garage for transient and steady trade, a well appointed upholstery department, a paint shop, and a repair and mechanical department.



The Howard Automobile Co., distributers of Buick cars on the Pacific Coast, looked a long way ahead when it called for designs for the Howard building. This four-story building was ample for the volume of business done in the first year of its use. Now the company has been forced to lease a building in the rear for a service station. It is convenient and has a separate entrance on California Street. The main salesroom is 60 x 80 and artistically arranged. The executive offices are on the mezzanine. The stock room is on the second floor. The service department in the rear is 45 x 135 and is easy of access

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The Coast Dealer's 3 Problems

Page
1—Car Shortage. 26
Only about 35 per cent of normal shipments are being made
2—Spare Parts.. 27
On the average the dealer must tie up $6,000 in parts
3—Used Cars...30
They have so many they don't know what to do with them

CAR shortage has become a chronic ailment of the automobile business on the Pacific Coast. In the good old days it was only a summer sickness; but apparently the malady has come to stay. The dealers have the showrooms, the ability to sell, and the customers; everything but the product.

Trade conditions have been booming; but a canvass of the principal dealers in this territory shows that the retail men have been prevented from getting a much larger volume of business because they haven't received their cars on time. Testimony from 114 men records that all but 13 have had trouble in getting an adequate supply during the year.

ONLY 35 per cent of the normal shipments are being made to the Pacific Coast at the present time. The manufacturers put this up to the railroads, saying that they cannot get freight cars and that shipments which required 10 to 15 days from Detroit now take 3 weeks or longer. The factories are shipping to near-by dealers, where the cars can be run to the market on their own power.

Chicago is the traffic congestion point, according to J. S. Marvin, traffic manager of the National Automobile Chamber of Commerce. West of that point the traffic is about normal, but there is much difficulty in getting through the Chicago yards. Freight rates to the Coast from Detroit at present are $3.10 per 100 lb.

The delays have been more noticeable during the summer months, but the deliveries have been short of the market to a certain extent all the year round. In California there was very little difference in the average shortage from one month to the next. Oregon and Washington have been feeling the pinch a little tighter during the warmer months; and this has held true also of Idaho, Nevada and Utah, where the amount of business conducted is much less than on the Coast.

The accounts of various dealers concerning their car-shortage worries vary widely according to local conditions, but the general average shows a constant lack of supply in the Far West market.

The Remedy

It's up to the manufacturer. The dealers believe that the producer can help the situation in a number of ways. Motor World asked whether the railroads or the manufacturer were to blame. The vote was close. Of the ninety-two replies to this question, fifty laid it to the car maker and forty-two to the railroads. But no matter whose fault it is, most dealers testify that the producer could make the conditions very much easier. Here are some suggested remedies:

Have assembly plants on the Pacific Coast.

Study the Far West market and realize that it has seasonal fluctuations as much as any other part of the country.

Allow the dealer to warehouse the cars during the dull season and pay the freight drafts on them when he sells his goods.

Don't announce new models until they are in the showrooms.

Change models less frequently.

Change models in January instead of late summer.

Build freight cars to carry the cars, so as not to be dependent on the railroad's rolling stock.

Give bigger commissions to the dealer so that he will have more capital to tide himself over the dull seasons.

Increase production.

Ship During the Dull Season

That the makers must ship cars during the dull season if they are to keep pace with the market when selling is heavy is the opinion of most of the retail men. The railroads have a rush of other business on the Coast at the same time as the big car season, and the way to meet that difficulty is to get the cars through in advance.

The question comes on the method, as suggested above. Some dealers suggest that they should provide themselves with cars a long time in advance, and do not suggest that the manufacturer help them with long-time credit. The man with small capital, however, cannot afford to tie up all his money in cars.

A great many recommend increased production; but it is safe to assume that practically all the factories are turning out as many cars as they profitably can now.

Want Coast Assembly Plants

"The best remedy is believed to be the establishment of assembly plants on the Coast," writes A. G. Waddell, of the

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Chevrolet Motor Co. of California, at Oakland, "with distributing centers in the North and South, say Los Angeles and Portland, where cars can be kept ready for delivery to dealers through adjacent territory."

Harold L. Arnold of Los Angeles believes that favoritism is being shown to the East and that most of the makers don't understand Pacific market conditions.

"Our experience for the past 3 years," he says, "has been that the manufacturer in almost every instance, and with all the three lines that we handle, favors the dealers in the Northern States along the eastern Canadian boundary, the New England States and the North Atlantic States, to the exclusion of other sections of the country, basing his conclusions that these are primarily States in which cars are sold only in the summer months and that we on the Pacific Coast have a 12 months' season in which to make up on our distribution.

No All-Year Season on Coast

"While it is true that we sell cars during the winter, it is also equally true that the Eastern distributers also sell cars in the winter, and it is also a fact that the purchasers in the West do not buy cars during the winter season in the quantity that they buy during the spring and early summer. We have, to practically the same extent, a periodical buying season on the Pacific Coast as the Eastern dealers, and therefore should be entitled to a pro-rata distribution."

C. F. Smith, of Smith Brothers, Los Angeles, says: "We believe the manufacturer to a more or less degree uses the Pacific Coast as a dumping ground, and as long as the Eastern dealer will take their production the Coast has a hard time getting enough stock."

Need Credit in Dull Season

Nevada, Idaho and Utah are up against it in much the same way as the Coast dealer, and more so. The trade in these States is light, which means that most of the dealers have a comparatively small amount of capital. One dealer out of 15 in this section says that he is having no trouble with shipments. The need for credit during the dull season is especially keen in this section.

"The difficulty may be overcome by the manufacturer storing cars with us in the winter at a low cost to us," suggests R. M. Ash, of the Boise Overland Co., Boise, Idaho.

Freight car shortage is a very acute problem, but it is by no means a hopeless one. The railroads do not expect to be able to move stock promptly as long as the business rush continues, but the manufacturer can anticipate delays, the dealers believe, in the many ways suggested.

It Costs $6,000 To Keep GOOD WILL

That's the Amount the Average Pacific Coast Dealer Must Tie Up in Spare Parts

SIX thousand dollars is the cost of keeping business good will for the average dealer in the Far West market. The average for the Pacific Coast States alone is $9,000. This is the sum which the average retail man has to keep tied up constantly in spare parts, and he has to have them on hand to keep the customer happy.

In keeping spare parts the dealer is giving service to the customer for the manufacturer, and most of the retail men feel that the manufacturer should help bear the burden of a department which is maintained to build up the reputation of a car. The profit in spare parts is not usually enough to make their sale a worth while proposition in view of the large stock which must be kept on hand.

Makers Don't Help

Do the manufacturers help to finance this side of the business? Apparently they do not. Motor World canvassed the leading dealers in the Far West territory, asking, "Do car manufacturers cooperate with you in financing the carrying of an adequate stock of parts for your territory, and if so how and to what extent?"

Most of the 114 replies were short and pointed. "No" (doubly underscored). "Not at all," "Positively not!" were the favorite answers.

There were about a dozen cheerful exceptions by dealers who handle lines which maintain service depots in the big Coast cities, of those who get parts or a percentage of them on consignment, and of those who are able to finance this department without inconvenience. Only three dealers report that they receive all parts on consignment, and three more receive a limited amount of stock on these terms.

Some dealers do not expect this aid.

"No," answers C. A. Rose, of the Rose-Nepple Auto Co., Olympia, Wash. "Nor do we think this should be expected. We carry a large stock of parts, however, and there are complete service stocks at Portland and Seattle when necessary." Due possibly to these service stations the Rose company needs to carry only $1,500 worth of parts on hand; but with some of the dealers as much as $40,000 is tied up in this manner.

The average is higher for the three Coast States than for the six Far West States, including Idaho, Nevada and Utah. The latter States, handling a smaller number and fewer lines of cars, do not call for as much spare parts stock, and hence there is not as much capital invested this way. But the amount invested in parts compared to the total business capital is probably as high as on the Coast.

Each dealer was asked how much money he had tied up in this way, and the average results by States are as follows: California, $12,506.50 per dealer; Washington, $8,935.64; Oregon, $5,500; Utah, $3,439; Nevada, $2,500; Idaho, $2,086, which brings the total average a little under $6,000.

So many problems have confronted the dealer that apparently he has given little thought to a remedy for this particular issue. There were but few constructive suggestions issued. The best satisfaction is apparently obtained where the manufacturing company maintains service depots. This cannot be done in the smaller communities, and in such cases the dealer would be aided by getting the parts on long time credit.

Million and a Half in Los Angeles Buildings

LOS ANGELES, Jan. 29—In excess of a million and one-half dollars has been expended for the construction of buildings to house motor car and accessory establishments here within the last three months. Some of the structures have represented an investment of $200,000 and none of them less than $20,000. Despite such unusual activity, the end is not in sight, as at least four more firms are planning new homes. The single story building is the most common type, but two, three and five-story structures are included in the list. The Mission and Spanish types of exterior are popular. Concrete, glazed brick and tile are the favored materials used.

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The twenty-first and twenty-second in a series

Two Pacific Coast Made



Earle C. Anthony

Los Angeles

EARLE C. ANTHONY, president of Earle C. Anthony, Inc., and one of the most successful automobile dealers of the Pacific Slope, unhesitatingly places the responsibility of his entry into the automobile business upon a typhoid germ which he encountered in 1903.

Born in Washington, Ill., in 1880, Anthony removed with his parents to Los Angeles, Cal., in 1890, where he went through the grade and high schools of that city. In 1899 he entered the University of California, in the college of electrical engineering, and graduated in 1903.

Intending to make long-distance power transmission his specialty, Anthony went to Cornell University for post-graduate work. Just here Fate intervened, however, and after three days of study at Cornell, a severe attack of typhoid gripped the young engineer.

Anthony spent three months of convalescence in the Harper Hospital in Detroit. Up and down the avenue in front of his hospital window traveled the new Packard cars, product of the Packard factory which had just that spring removed from Warren, Ohio, to Detroit.

Anthony vanquished the typhoid but fell a hopeless victim to the automobile fever.

Returning to Los Angeles he launched into the automobile business in the spring of 1904 as Los Angeles representative for the three-cylinder Thomas, the Pope-Toledo and the Northern. Somewhat later he bought out another dealer and added the Knox, the Cadillac and the Stevens.

In 1905 he became southern California representative for the Packard and has held that agency steadily for 12 years. In 1915 he took over the Reo line and at present Earle C. Anthony, Inc., is Reo distributer for the State of California and Packard distributer for southern California.

The erstwhile electrical engineer to-day is head of one of the biggest automobile retailing organizations in the country. With headquarters in a magnificent four-story concrete structure in Los Angeles, the firm has branches in San Francisco, Oakland, Secramento, Fresno, Bakersfield, San Diego and Pasadena as well. More than 140 of the best garages in the state act as Anthony service stations and honor the service coupons of the patrons of the Anthony organization. The employees of the company number more than 160. Last year Anthony sold 250 Packard Twin-Sixes, 50 Packard trucks, 1019 Reo cars and trucks and 333 used cars.

The Why:

"Unquestionably, proper organization is the real basis of any success a business house attains," declares Anthony. "There must be a real harmony existing between every department of a business such as this.

"Absolute adherence to the one-price system I also count an important factor. Since this firm has been established that has been one of the unbreakable rules. A cut price on a car means a cut in the quality of the service that the buyer is going to get afterward.

"Prompt and efficient service to owners, of course, is a vital matter. It will go far toward retaining a solid clientele of old owners and is the best sort of an inducement to new customers."

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Dealers Who Have Good

L. H. ROSE, one of the leading Chalmers distributors in the country, started his career in the modest capacity of an office messenger.

Since that time "Lou" Rose has seen 22 years of experience, during which he has divided his time among two leading lines of endeavor—smiling and selling motor cars. Of recent years as an added accomplishment he has endeavored to be an expert of the 18-hole course. He still endeavors.

Rose was born in Indianapolis in 1883. Carl G. Fisher at that time was a bicycle dealer there, and in 1895 took on the famous old Haynes phaeton, being the first motor car dealer in the state of Indiana. Rose entered his employ in that year as an errand boy.

He advanced rapidly and ten years later moved west to the state of Washington, where he enjoyed the distinction of opening the first garage and accessory business in Spokane.

In 1909 Rose went to Detroit and became assistant sales manager of the Studebaker company.

After learning the manufacturing end of the motor car business thoroughly through six years' experience at the Studebaker and afterward the Lozier factory, Rose again treked to the Pacific, this time as Pacific Coast sales manager for the Maxwell company with headquarters in San Francisco.

Having spent his years in the manufacturing as well as the selling end it was Rose's intention to capitalize on this experience and again enter business for himself.

He resigned from the Maxwell and organized the L. H. Rose-Chalmers Co. in July, 1915, taking the Chalmers territory for northern California.

In the year and a half of operation that has now passed his latest adventure has been little short of phenomenal. During the entire 1915 there were but 110 Chalmers delivered as against a total of 1085 delivered by the Rose-Chalmers organization in the year just closed.

The Why:

"With a sound business foundation to start," said Rose, "it has been my aim to smile my way through obstacles and competition. Smiles make friends and friends make business."



L. H. Rose

San Francisco

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A Pacific Coast View—

USED CARS

THE TROUBLE

1—$630,000 Worth On Hand
2—Poor Business Standards
3—Lack of Co-operation
4—Cutthroat Competition

FAILURE to trust the other fellow is costing the dealers on the Pacific Coast thousands of dollars a year. This is especially true with regard to the prices paid for used cars. Each retail man wants to go it alone and bluff his competitor. The result is cutthroat competition, plenty of opportunity for wild-cat, fly-by-night dealers, and a total lack of business standards.

The dealers say this of themselves. When it comes to the used car proposition they don't pass the buck. They admit that co-operation is the answer. But except for a few isolated cases, such as Sacramento, no one follows the remedy suggested. MOTOR WORLD queried the leading dealers on what they are doing about the used car trouble, and what they would like to do. Out of 114 replies most of the retail men say they would like to see some co-operation.

Few Are Satisfied

Ten say they are satisfied with things as they are. Several want the manufacturer to buy back the used cars. Another suggestion is that a system of cost accounting would show the dealer how much he is gaining or losing in his used car department, and would bring that branch of the trade to a business basis. Some dealers are able to rebuild and resell the old cars at a profit, two say that they turn the used cars into commercial vehicles; but the general demand is for a clearing house which would set a standard of prices.

"There would be far less used car troubles," writes Paul Roberts of the Roberts Automobile Co., Pocatello, Idaho, "if the dealers figured on making money and not trying to see how many cars they can give away."

Many Refuse Used Cars

Many dealers have become so disgusted with the prices asked for used cars that they refuse absolutely to accept them even though it means losing sales.

"We will not trade in a used car," comments the manager of the White-Savage Motor Co., Salt Lake City. "When a man buys a suit of clothes he does not expect to wear it 6 months and trade it in on a new one. Why not educate the buyer of automobiles the same way?"

"Use It a While"

One way to get the customer into a reasonable frame of mind about the value of an old car is to persuade him to use it for a long time. "Distributors and dealers," says Harold L. Arnold of Los Angeles, "should take a broader gauge view of the business and instead of trying to sell their old customers a new car each year, should endeavor to get their customers to use their old cars until they had given a reasonable amount of service. We find that the larger percentage of our customers are laboring under the idea that they should change their cars at least once a year, trading in their old car when it is still in serviceable condition. . . . The result is that the customer must either take an extraordinary depreciation on his car, which is not warranted, or the dealer will assume a part of this loss for him—the latter usually being the case. . . .

"We figure it to be much better business to have our customers driving their old models, and telling their friends that there is no reason to trade in the old car because it is still serviceable and operating as satisfactorily as ever, rather than to have them distributing the word that if they buy a car of any of our respective lines, they figure that they must trade it in every few months in order to avoid heavy repair bills."

Another way to get the customer to accept a just price for his old car is to refer him to some standard authority. W. A. Wicks of the Franklin-Wicks Co., Seattle, says, "I am employing the Chicago Used Car Market Report to influence purchasers to accept reasonable value on their used cars . . . the dealer must be able to keep the buying public in the frame of mind that the used car can be traded in at, say, 20 per cent less than its resale value when thoroughly overhauled and guaranteed. . . . These costs plus selling and advertising will total 15 per cent, leaving a legitimate margin of 5 per cent on the dealer's used car investment." Wicks is president of the Seattle Motor Car Dealers' Assn.

O. H. Nixon of the Johnson Motor Car Co., Boise, Idaho, also recommends the use of the Used Car Report.

Co-operation Is the Answer

Co-operation is the answer; but the fact that there is an organization doesn't mean that all the members are sticking together, or that they are using the opportunities afforded by their association. In fact, with the exception of Sacramento, the reports of association work are fairly pessimistic. The co-operation has appeared more in name than in fact.

P. E. Sands, Waterhouse Sands Co., Seattle, reports that the Washington Automobile Chamber of Commerce, of which he is chairman of the executive committee, reports that only 25 per cent of the dealers in the state have joined the association. C. F. Smith of Smith Brothers, Los Angeles, writes that there is no organized solution of the problem in that city. An effort is now being made to form the San Francisco Automobile Trade Association which, if successful, will tackle the dealers' worries in that city. C. L. Howe of the Mitchell, Lewis & Staver Co. writes: "Our Portland Dealers' Association has been trying for several years to adopt some plan to relieve the used car condition, but up to

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the present time has not found any plan which works out successfully."

No Complaints from Sacramento

It speaks well for Sacramento and the work of the association there that there are no complaints of used car difficulties from that city.

Dealers have learned to have business confidence in each other. They have framed their organization in such a way that it is directly profitable and necessary for each member to deal fairly with the other. I. Christie of the Christie Motor Car Co. describes the plan briefly as follows:

"Sacramento dealers have the oldest automobile dealers association on the Coast and have done a great amount of good. At the present time we are incorporated for the purpose of handling our second hand cars. The plan is this:

"Each dealer has stock in this corporation, also a bond or cash deposit of $250 as a guarantee of good faith. By having stock it is his business as much as the directors to see to it that the thing is a success. We lease a suitable building, hire a manager and help. The manager appraises all cars that come to the dealer for trade, issues a certificate setting forth the condition of the car, the condition of the tires and the equipment. Any dealer can take that car in within 10 days after date of appraisement at the price put on it by the manager.

"The car then is turned into the exchange and the dealer is given a certificate for the amount of the appraisement. The car is put in condition to sell, 10 per cent added to the original price. Should the car have to be sold for less than the price put on it, the association loses the difference."

"Every dealer is a booster and a salesman for the exchange," says another retail man in the capital city, "Now both competition and co-operation are keen and clean in Sacramento."

The exchange plan, however, is not so easily worked in the towns and small cities. There are not enough dealers to pay for a manager and central establishment. Moreover, the proportionate power of the individual dealers is greater. If one dealer becomes a sorehead in a big organization he can nurse his grouch until he gets over it and nobody cares. He is the loser. But if one man in a group of four or five tries to smash up the combination or act as a freelance the results may be disastrous.

If the small town dealers can agree on a fixed standard of prices and abide by it, much intense and unnecessary competition may be eliminated. The reports from the less populated sections show, in the main, a pessimistic attitude toward the used car problem. Some dealers have stopped taking used cars, many others say that they have no idea how the situation may be remedied. Others urge the clearinghouse idea, but doubt whether it can be put through on a small scale.

L. A. Porter, proprietor of the White Front Garage, Lewiston, Idaho, has a letter somewhat typical of the hardships which the small town dealer has to face. He writes that the way for a dealer to make expenses on the used car proposition is "only by selling at a ridiculously low price, and on long terms, and trading for stock, etc., with the farmers. Co-operation in the larger cities should work, but in small places too much jealousy among the dealers. They would not keep in line to any promises, is my belief."

The dealers, however, have this ray of hope in regard to this particular problem. The chief blame rests not on the customer, not on the manufacturer, but on the retail branch of the industry. The desire for co-operation is strong, and there are many associations under way which give some promise of success.

Coast Dealers Put Deadline on Used-Car Business

Some of Them Put on the Brakes at $20,000

A GOLDEN harvest awaits the person who can determine the answer to the used car problem for the dealers of Los Angeles. An approximation of the sales value of the used cars in the hands of thirty leading dealers, January 20, 1917, was $630,000. These were dealers in new cars, who had accepted used cars in exchange, trade or on consignment. If all the exclusively used-car dealers were included and added to their stock the holdings of the vacant lot operators, the total would exceed a million dollars, estimated very conservatively.

Asked if the used-car problem constitutes a menace, or an evil to the business, some dealers said it does; others answered the question by saying, "It has become a part of the business."

A list of used cars held by one dealer alone contained 100 cars and the selling price, also listed placed the total value at close to $100,000. This dealer had taken in one car, selling for $3500 that had been run only the distance from the original dealer's place to his where it was traded in on a car selling for only $3800. The same dealer had in stock another car, a roadster, that sold for $2750. The speedometer showed it had been driven only 57 miles. Competitors say it is this wild trading and shooting high on values that account for this dealer having $100,000 tied up in used cars.

One Los Angeles dealer, during 1916, refused to take used cars in trade. It made no difference if they were cars of the same make he was selling. He represented two popular lines and always was behind with deliveries. When asked to make an allowance on a used car, he merely stated, "We are not taking any cars in trade."

He did accept them on consignment, though. That is, the owner, after placing an order for a new car could leave his old car with the dealer to be offered for sale. The price was agreed upon and it was stipulated that if the dealer sold it for a higher figure, the owner should benefit by the difference. Usually, there was a time limit for sale established, ranging from 10 to 30 days.

Working upon this basis and without having a cent of his own money involved this dealer had the most successful year in his long history and sold more than 1300 new cars.

It is the common practice for dealers to establish a dead line on the amount of money they permit their used-car department to represent. The rapidity with which the cars can be moved, the demand for new cars and other factors enter into the figure set for the dead line.

With some dealers $20,000 an average figure represents this sum. Beyond that amount they will not take trades. The prospective purchaser of a new car who desires to make a trade, is told, "The house is full-up on used cars," or, "We are not taking any trades now," and the prospect must dispose of his car himself or place it with the dealer on consignment.

Dealers say the amount represented by the Los Angeles used-car market today is no greater than it was one year ago. They are fighting hard to keep the maximum as low as possible and do business. There are many thousands of dollars represented in used cars that never

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The Locomobile building is off the main motor way, about 100 ft. west of Van Ness Avenue, and runs through to an alley in the rear. The front part of the lower floor has been converted into an attractive showroom, and the rear is used for the service department where numerous entrances face on the alley. The offices are on the mezzanine and the upper floors of the three-story building are given over to parts and service departments.

will be realized on except at great sacrifice. Some dealers have had certain cars in stock for more than a year, refusing to accept a loss. Others prefer accepting a small loss in order to move the stock.

Neglect or refusal on the part of dealers to establish a fixed value on cars of certain specifications and abide by this value has worked incalculable loss. The used-car owner continues to peddle his car and dealers are willing to bid against each other in the amount of allowance on a new car. Dealers admit this failure to get together costs them thousands of dollars annually. Like any other concentrated movement, it takes someone to start it and the shepherd has not appeared to date.

Some of the most successful dealers in ridding their stocks, have adopted the plan of repainting every used car they take in before offering it for sale. A coat of paint has covered a multitude of sins in many instances and the dealer profited by his foresight. Paint has put over many a sale and because of its fascination, the buyer has neglected even to ask the motor's condition, or examine the tires. Some dealers allow a three months' free mechanical inspection of used cars and term it service.

The Los Angeles dealers are said to be the most prolific in the country in the use of printer's ink to help sell old cars. This usually means ads run in the classified columns, but, occasionally, a display ad is inserted in the news or automobile sections. It is not unusual for a newspaper to carry on Sunday morning as many as thirty columns of agate type advertising second-hand cars. There are three Sunday newspapers in the city, so it can be seen what this business amounts to. Some dealers spend $500 advertising used-cars in a month. Others limit their expenditure to half this sum. About ten months ago, some dealers "unloaded" when the demand for used cars for the jitney trade was at its height, but jitney operators soon found it to their advantage to buy new cars or light trucks for this service.

Dearborn Truck Drops Motor

CHICAGO, Jan. 22—The Dearborn Motor Truck Co. has been reorganized as the Dearborn Truck Co. and its capital increased to $550,000. S. D. Porter, formerly vice-president and general sales manager of the Smith Form-A Truck Co., has purchased an interest in the Dearborn company and has been elected its vice-president, treasurer and general manager. W. J. Kenrick remains president. C. E. Stuart has been made sales manager. The company produces units for converting a Ford into a 1-ton truck, the present capacity being 25 units per day. Additional machinery is being installed which will double the capacity.



Winton has a factory branch on a Van Ness corner which is arranged primarily for service. The salesrooms are small. The service station is in the rear and is reached by a separate entrance

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The Pacific Kissel Kar Branch, which handles Kissel, Briscoe and Federal trucks in all the territory west of Utah, has one of the largest establishments in San Francisco, which is the coast headquarters of the firm. The salesrooms are 100 x 60. The offices are in the rear of the main showroom in two tiers. A striking feature is the service department on the second floor. There is an incline of 13 per cent, leading from the street at one side through the entire block. A machine can be driven into the service department, repaired, and driven out with the least possible loss of time. The machine shop and service departments fill the second floor—an entire city block

SAN FRANCISCO ROW—THE WORLD'S FINEST

(*Continued from page* 21.)

building may be smaller; there is no need to have an area on one ground floor large enough to care for both the salesroom and the service station. The slightly inclined ramp gives ready access to the second ground floor, makes it easy for the car owner to drive in and out and eliminates the time lost waiting for an elevator and its expense.

Most of the buildings are at least two stories in height, many are more than this. And nearly all of them have mezzanine galleries which serve so well for offices.

Where the building has more than two floors the upper floors generally are used for the machine shop, for painting, for a used car department and for the storage of cars—all of them departments requiring the infrequent use of an elevator and none requiring to be as accessible as the service department, where hundreds of minor adjustments may be made in a day.

Mammoth Exhibition Building for New York

NEW YORK, Jan. 29—This city is to have additional exhibition space seating 40,000, according to plans which are being formulated for the construction of a large amphitheater to occupy an entire city block some place between Forty-second and Fifty-ninth Streets and Fifth and Seventh Avenues. The building is to cost between $7,000,000 and $8,000,000, and is expected to be finished next year.

Firestone to Build in Toledo

TOLEDO, Jan. 29—A central distributing plant for parts of Ohio, Indiana and Michigan, to be located in Toledo, is being planned by the Firestone Tire & Rubber Co. The company expects to erect a building with 15,000 sq. ft. of floor space, and will employ a force of 40 workers. Temporary quarters will be established soon with G. E. Burkit as manager.



The Marmon, handled by the H. B. Rector Company, is now quartered in a new home. An attractive salesroom, ornately decorated, aids materially in setting off the Marmon models. The room is large enough to provide for a display of six cars at one time. The service department is in the rear of the sales floor and reached through a separate entrance at the left side of the building. The mechanical department fills the second floor of the building

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Better Business *Is the* Jobbers' Slogan

This is one of the bigger movements the National Association has started—The strong will help the weak and firmly cement the bonds of membership.



PRESIDENT
Chas. E. Faeth,
Motor & Machinists' Supply Co., Kansas City

CHICAGO, Jan. 27—One thing stands out in the second annual meeting of the National Association of Automobile Accessory Jobbers which closed yesterday at the Congress Hotel.

The conspicuous fact is that between 300 and 400 men were gathered in the same room in the Congress where scarcely a good dozen met but 18 months ago at the organization's first meeting.

It was regarded as fitting that this session, with its big, strong membership, should be held in the room that a year and a half ago echoed with emptiness as the pioneers laid the foundations.

The spirit seemed to pervade the whole gathering, for, instead of passing operative resolutions and devoting the time to specific big reforms, the whole session was given over to a smoothing out of little rough spots and a firmer cementing of the bonds of membership.

This meeting may be said to have put a finishing touch on the organization.

As a firmer bond between members the association voted as its sentiment that members should not rush into litigation unless they have to, and that disputes of every kind should be taken up with the commissioner as an arbiter in an effort to avoid the delays and cost of court actions.



WILLIAM M. WEBSTER
Commissioner of the N. A. A. A. J., as drawn at the banquet by Sid Smith, creator of Old Doc. Yak. Doc's car number is 348. So is Sid's

One infringement situation has already been so adjusted with satisfaction to both sides and practically no cost, whereas a lawsuit might have dragged out for years and cost the disputants thousands of dollars.

And now that the association has passed the point where it was loosely knit it is beginning to devote its efforts to bigger movements. It has entered with enthusiasm into the betterment of the dealer and garage trade and big things are expected.

It appropriated $750 in addition to the $1,000 set aside at the last meeting for advertising and publicity work.

THE BETTER BUSINESS COMMITTEE

Various state chairmen of a Better Business Committee reported what has been done in their states toward forming trade associations and pulling the whole retail business to a higher level. This work was one of the most conspicuous parts of the convention.

Commissioner Webster told of a meeting he recently attended of the Iowa Retail Automobile Dealers' Association in Fort Dodge, where about 150 dealers and garagemen gathered, gave that state a shove toward closer co-operation and Better Business and drew in closer to the jobbers' association in the work for trade uplift.

Robert Weinstock, of San Francisco, said there is a strong organization in California, with 700 members and that it is getting stronger. The principal work thus far has been educating dealers and garagemen on the foolishness of price-cutting and the necessity for standard prices, better accounting and Better Business. This organization hopes to employ an accountant at a salary to further the work.

C. D. Pettingill, of Florida, said there was a good local in Jacksonville, and that Tampa is getting ready to organize. He stated he would take the work up more actively from now on and hoped to see Florida strongly organized within a short time.

Thos. Bass, Peoria, said the movement in Illinois is in fair condition, but that the locals do not seem to be getting all they should out of their organizations. Some of them are formed to hold a show and do not go much further, whereas there are wonderful benefits to be obtained if the members but display activity. He urged affiliation of locals with state organizations.

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A. J. Jackson, Hutchinson, said a state association was recently formed in Topeka, Kan., and was spreading the movement over the whole state. Locals are being formed and one is to be organized soon in Dodge City, which will hold a show.

W. A. Shuler, New Orleans, said there is a good association in that city and that a call will soon be issued for the formation of an association of dealers and garagemen in Louisiana.

A. M. Moody, Boston, said Massachusetts has been backward, but that results undoubtedly would come if the work were pushed.

John F. Shuford, St. Louis, said that J. C. Thorpe, of the National Automobile Trade Association, would organize Missouri soon after the close of the present jobbers' convention.

E. A. Pegau, Omaha, said Nebraska was ready to fall at the push of a finger. At a meeting of the state chairmen with J. C. Thorpe, following the convention, plans were laid for the organization of Nebraska during the Omaha show. The tentative plan is to ask the Omaha Automobile Trade Association to sponsor the movement and have the meeting on one or two days while practically all the dealers are in Omaha for the automobile show. The tentative date is Wednesday, Feb. 28, and possible 29. A banquet will be held. Pegau is working under difficulties in that he recently fell and broke his ankle and attended the convention on crutches.

Charles E. Justus, Columbus, a jobber, told of how he, a manufacturer and a dealer are the board of governors of the Ohio Automobile Trade Association and are slowly but surely helping the trade organization in that state toward success. They have pledged $1,000, have put a field man on the job, have sent 5000 pieces of literature out and will hold a big convention next October. At that time a manufacturers' exhibit is to be operated in conjunction with the meeting.

J. E. Jackson, Pittsburgh, said the ground work had been laid in Pennsylvania and that an organization might be formed in from 30 to 90 days.

C. A. Paine, Providence, said a meeting was held in Rhode Island a year ago, but that the movement had lagged since.

H. F. Bonnell, Sioux Falls, reported that progress is being made in South Dakota. Fifty interested men are already lined up in the work, literature is to be sent out, salesmen are preaching the propaganda and the movement looks well. He said the trade paper advertising of the association had helped in the work.

N. F. Ozburn, of Tennessee, said little had been done in that state beyond forming locals in Chattanooga, Memphis and Nashville, the first named being the strongest.

G. W. Hawkins, Houston, reported little progress. An association of the San Antonio trade was formed some time ago, but it died. Prospects in Houston are good.

F. H. Suter, Wisconsin, said the principal object of the associations thus far in that state had been to buy co-operatively, but that a campaign for organizing the state would be put on within the next three months.

J. Ernest Millen, Montreal, said Canada has associations in Montreal, Hamilton, Vancouver and Winnipeg. Winnipeg is to hold a meeting next month for the organization of all Manitoba. Definite work has been planned in Montreal and other points, including credits, accounting, legislation, trade allowances, repair schedules, shows and some other matters.

The convention heard a report written by J. C. Thorpe, of the National Automobile Trade Association, and the sentiment was expressed that the jobbers should henceforth work in closer connection with Thorpe and the organization he represents.

The convention expressed its disapproval of another so-called national association of garagemen, which is operating an association in connection with subscription to a magazine which the organization promoter is running. This outfit, it was stated, has taken a fly at syndicate buying and is trying to effect cut prices.

THE OFFICERS

President

Chas. E. Faeth.... Kansas City
Motor & Machinists Supply Co.

Vice-president

E. C. Graham.... Washington, D.C.
National Electric Supply Co.

Chairman of Board

P. H. Lyon..... San Francisco
Chanslor & Lyon Co.

Vice-chairman of Board

Wm. Sparks .....Jackson, Mich.
Sparks-Withington Co.

Directors—1 year

Chas. E. Faeth.... Missouri
Franklin Mayo ... Illinois
G. N. Baughman.. Florida
J. M. Bloch..... Indiana
A. M. Moody..... Massachusetts
C. E. Scott..... Texas

Directors—2 years

E. C. Graham.... Washington
W. W. Low..... Illinois
G. N. Shafer..... New York
F. B. Caswell..... Ohio
C. E. Jackson.... Pennsylvania
G. M. MacWilliam. Canada

Directors—3 years

C. F. Wright..... Oregon
Wm. Sparks ..... Michigan
P. H. Lyon..... California
W. K. Norris..... Missouri
S. F. Beech..... Illinois
R. R. Englehart... Iowa

Finance Committee

Chas. E. Faeth
(ex-officio) .... Missouri
E. M. Cumings... Michigan
G. F. Discher..... Wisconsin

Membership Committee

Fred Campbell
(Chairman) .... Missouri
R. Weinstock .... California
J. H. Cooper..... New Jersey
C. A. Wigmore... Pennsylvania
Geo. T. Briggs... Indiana
H. F. Brownell... South Dakota
E. E. Arnold..... New York
F. T. Chase..... Massachusetts
A. J. Hopkins.... Canada
P. Stern ..... Louisiana
W. P. Coghlan.... New Jersey

THE NEXT MEETING

Hot Springs, Va., June 4-5-6

THE next meeting will be at the Homestead Hotel, Hot Springs, where the spring meeting was held in 1916. The place proved popular with its tennis courts, golf links, walks, rides, drives and baths. Atlanta made a bid, but the outdoor fans remembered the spring meeting and Hot Springs won out.

The Pacific Coast wants a convention and undoubtedly will get it in the spring of 1918. San Francisco probably will be the city.

WAR ORDER PRICE WRECKERS

It was revealed, as the result of an investigation, that the so-called foreign agent is sometimes the channel through which the manufacturer's goods find their way into the hands of the price wrecker, who by beating down the price and sacrificing the goods hurts the sale of these goods and works a financial damage to the manufacturer. One company on Long Island, N. Y., with an aeronautical name, was said to be one of these pseudo foreign agents that are reselling the goods at home instead of sending them abroad. The foreign agent is sometimes given a better price than the domestic distributor.

(*Continued on next page.*)

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The Association's Advertising Work

THE venture of the jobbers into publicity for the organization in an effort to get the dealers and the jobbers closer together has worked out successfully; $1,000 was appropriated at the St. Louis meeting for advertising in trade papers and at this meeting $750 more was appropriated. But half of the $1,000 has been spent thus far.

It has been spent in a series of advertisements in which the association first introduced itself to the trade and then began constructive talks on business methods with the invitation to the trade to co-operate with the jobbers' association in the effort to uplift the whole business. The report was presented by Chairman Stanley Roberts, Toledo, of the Better Business Committee. It follows:

At the last meeting of the association, the association authorized the committee on assisting the trade to spend not more than $1,000 in advertising in national trade publications with the idea of assisting in the bettering of trade relations.

Your committee decided to run three different pieces of copy all directed to dealers and garagemen. Copy has already appeared twice, the first being a general announcement as to the aims of the association. In this announcement the idea was conveyed; first, of the strength of the organization—that it was national in its scope and, second, that it was desirous of assisting the dealer in his trade relations with the jobbers and manufacturers.

Our second piece of copy appeared about two weeks ago and was on the matter of "credits and collections," and urged the dealer to closely collect his own accounts and to watch his credits more carefully.

The third piece of copy, which appears this week, will call to the dealers' attention the fact that manufacturers supply quantities of literature, display stands and cards, and that the dealer in a majority of cases fails to use them properly and as a result the manufacturers spend thousands of dollars needlessly. Our advertisement contains an appeal to the dealer to use prominently and effectively all literature and display matter furnished by the manufacturer —to try to hitch up his own business with the manufacturer's advertising efforts.

Your committee feels that an excellent start has been made. A great many dealers who have felt that this national association was purely for the benefit of the members have found out differently.

Dealers whose interest was passive, have been surprised that we were willing to spend money to let them know we want to work with them. These same dealers begin now to take an interest in our suggestions. Two or three of our jobbing friends have told us of particular instances where this work which really has only just started has already developed results.

It is the idea of your committee that they should run copy once a month in trade magazines for the next four months or until our next meeting.

Your committee has a number of subjects in mind that they wish to approach the dealer on in some of the next advertisements. Some of the subjects that are under consideration are:

1—What is your overhead?

2—Returned goods.

3—Have you a real cost system?

4—The responsibility the dealer assumes when he places an order.

5—What f. o. b. shipping point means.

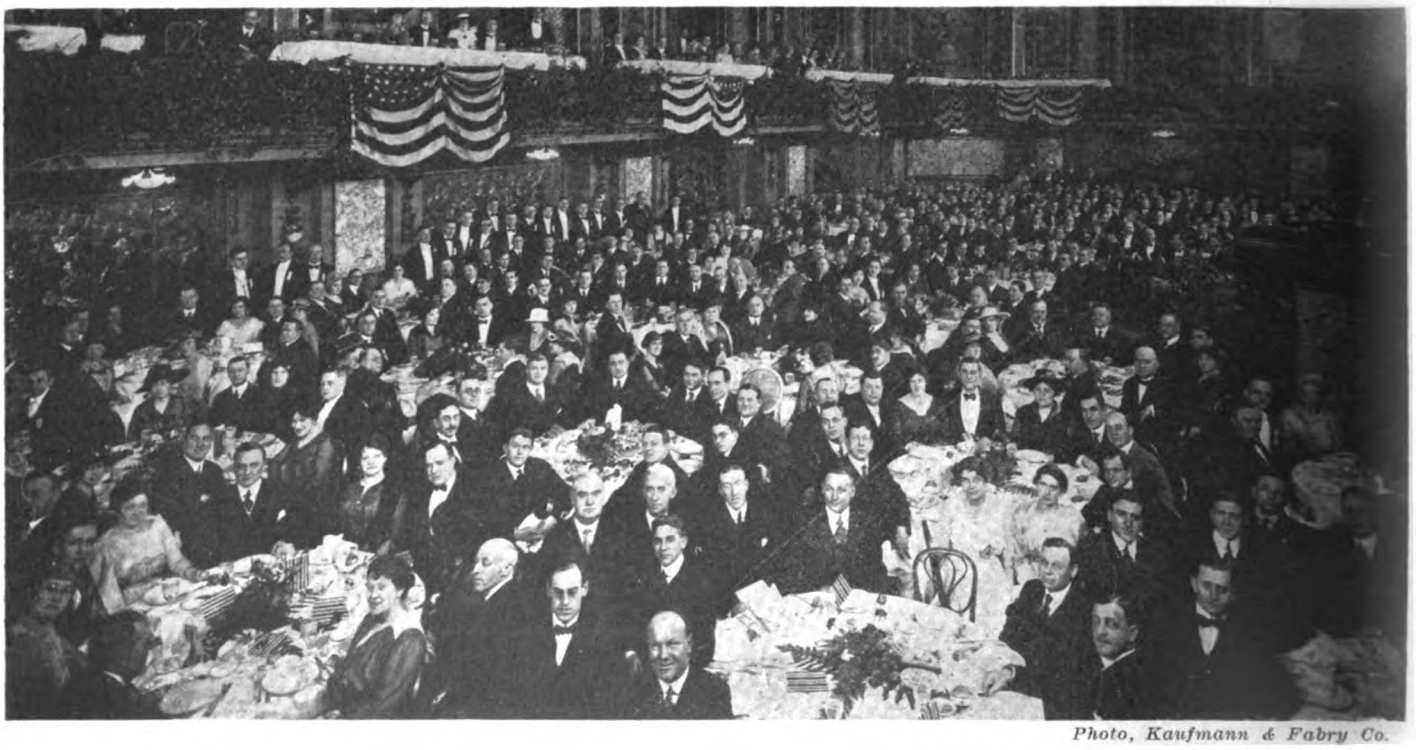
6—Cleanliness.

On this last point we want to call attention of the association to the very splendid work that is being done by the Ford Motor Co. They have insisted upon their dealers having clean, well-kept and orderly places of business. This, of course, is greatly to the benefit of the Ford Motor Co., but every member of the association is realizing this advantage also.

The duties of the committee on assisting the trade are very broad and we have for the present confined our efforts towards reaching the dealer with our message of co-operation.

We feel that we are making headway in this, and that we have generally shown the dealers that the jobbers' association stands for co-operation. The money we have asked for is to continue the efforts of your committee, and with the excellent start made so far, we feel sure that the money is well spent. We therefore, ask that the association authorize us to proceed with the expenditure of not more than $750 additional.

Besides the publicity just referred to members of your committee have appeared before the annual meetings of the Iowa Retail Automobile Dealers' Association and the Ohio Automobile Trade



Photo, Kaufmann & Fabry Co.

Here are half of those who attended the banquet of the National Association of Automobile Accessory Jobbers—

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Association and the Michigan Automobile Trade Association.

At the Iowa meeting Commissioner Webster made an address that was very well received and which produced excellent results. The Michigan association has also evidenced the same feeling of appreciation of the jobbers' co-operation by addressing to this association a set of resolutions.

It is evident that considerable headway is being made in convincing the dealer that the jobber and manufacturer both are desirous of co-operating with him and with this start, followed up by further efforts to actually assist the dealer, there is every reason to believe that a very great deal of good can be accomplished and very beneficial results obtained.

It has been suggested that the association have printed in the size of envelope stuffers, some of the copy that will be used.

Very often some subjects will particularly appeal to some jobbers and will contain a message that he would like very much to have conveyed directly to each one of his customers.

In such a case, it would be the suggestion of the committee that any such copy be printed upon an envelope stuffer and sent out by the jobber himself. We have considered getting up in pamphlet form the series of advertisements as they will appear and to ask each jobber to mail them with his statements. This would give our efforts a very effective broadside and your committee has only refrained from recommending that this be done due to the fact that it would cost a good many hundred dollars to print enough pamphlets for each jobber.

We would, therefore, suggest if any particular copy appeals to any jobber as assisting him in correcting some trade abuses that they have this copy reprinted and used as an envelope stuffer.

TRIBUTE TO WEBSTER

One of the sentimental moments came near the close of the meeting when S. F. Beach, Chicago, in a few words paid a verbal tribute to the commissioner. A long applause and rising vote followed. Then everybody wanted a speech from "George," who is George Woelfel, Jr., the commissioner's secretary. George made it.

WHAT IS A SEMI-JOBBER?

The semi-jobber came in for the usual discussion. A semi-jobber is a man or company that asserts it is doing a jobbing business, and on the basis of the association's definition, is entitled to jobbing prices. Sometimes these long discounts are legitimately used and sometimes not. Sometimes the semi-jobber, or would-be jobber, runs a mail order business. The sentiment of the jobbers is that these people are not entitled to consideration as jobbers until they become jobbers in reality.

SEPARATE MEETINGS.

Because there are matters which concern the jobbers and manufacturers separately, separate meetings are hereafter to be held the afternoon of the second day of future conventions. Anything at these separate sessions which concerns the whole body will be brought into the general meetings.

THE BIG DINNER

The Chicago members entertained royally. A dinner and dance were held Thursday evening in the Gold room of the Congress. There were no speeches, but considerable entertainment, part of which consisted of cartoon work by Sid Smith, of the Chicago *Tribune* and creator of Old Doc Yak of comic fame. Smith drew a picture of Commissioner Webster and also of Charles W. Schroyer, Mayor of Dayton, and a jobber. W. W. Low's picture aroused mirth through its solitary hair, which is a several hundred per cent exaggeration.

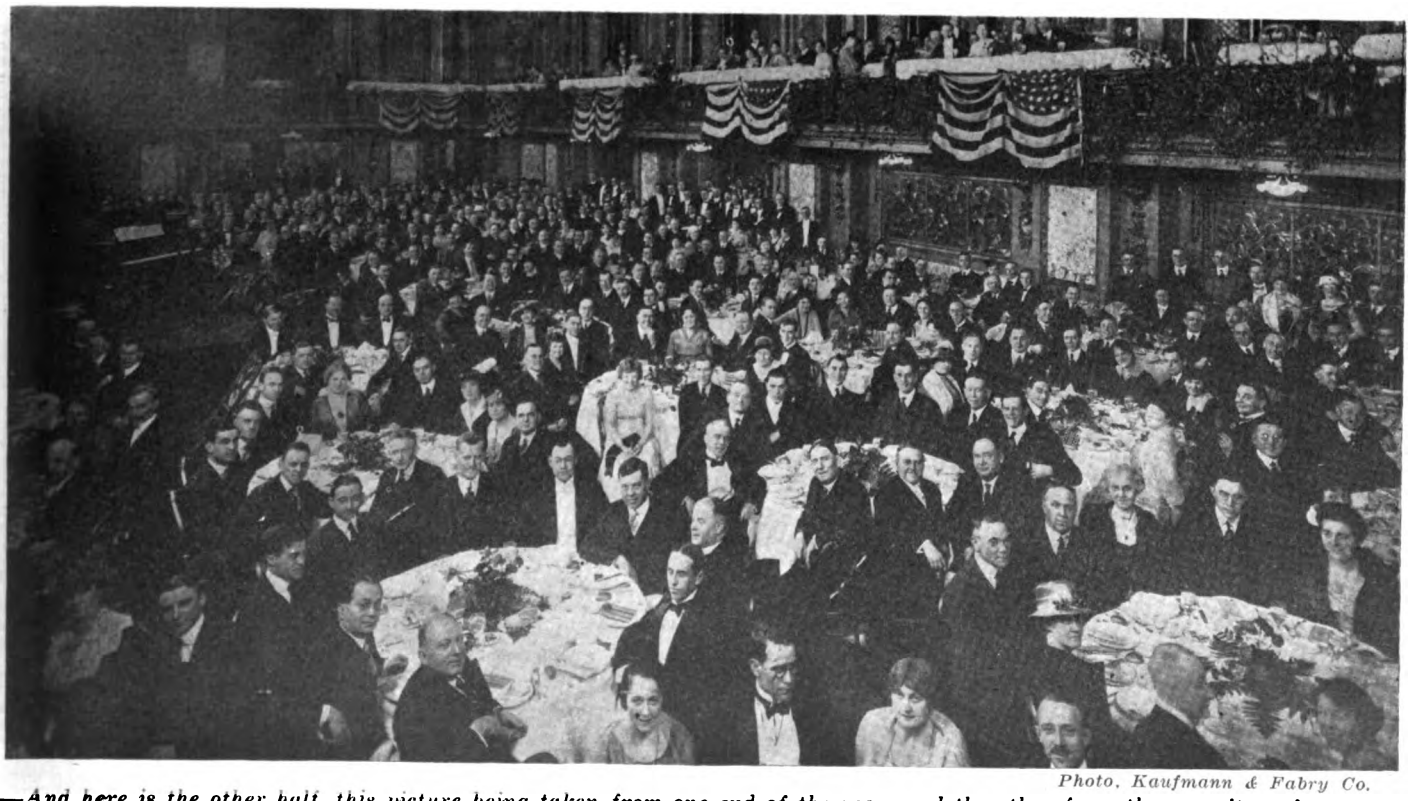
WHAT IS A REBATE?

The old question of rebates was up again. This time one jobber wanted to know just what is a rebate and what is a discount. It simmered down to this: A rebate is money paid back at the end of a period, based upon the amount of business during that period. A discount is a reduction from the list price, given for the amount of business in the individual order placed, or sometimes, but not favorably regarded, with several separate orders.

STANDARDIZATION

A great future lies before the Committee on Standardization. It has in hand a list of 100 articles which it believes can be standardized as to shipping and pack-

(*Continued on page* 65.)



Photo, Kaufmann & Fabry Co.

—And here is the other half, this picture being taken from one end of the room and the other from the opposite end.

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The Jobbers List

THIS list of jobbers was compiled by the National Association of Automobile Accessory Jobbers.

Those marked with an asterisk (*) are members of the association. The asterisked names in the jobbers' list, together with the list of associate members (see next page) constitute the complete membership of the organization.

William M. Webster, with offices in the City Hall Square Building, Chicago, is commissioner of the association.

ALABAMA

*Brownell Auto Co.....Birmingham
*Drennen Motor Car Co.....Birmingham

ARKANSAS

Rose-Lyon Hardware Co.....Little Rock

CALIFORNIA

*Auto Tire Co.....San Diego
Beckley-Ralston Co.....San Francisco
*Chanslor & Lyon Co.....San Francisco
*Campbell-Collins Co.....San Jose
Day & Co., E. J.....Oakland
*Electric Appliance Co.....San Francisco
*Featherstone, E. A.....Los Angeles
*Gavin-Williams Co.....San Diego
Kimball-Upson Co.....Sacramento
*Latham Auto Supply Co.....San Francisco
*McCoy Motor Supply Co.....San Francisco
Mohrig Bros.....San Francisco
Pacific Hardware & Steel Co..San Francisco
Remick Co., James S.....Sacramento
Union Hardware & Metal Co....Los Angeles
*Weinstock-Nichols Co.....San Francisco
*Western Rubber & Supply Co..Los Angeles
Waterhouse-Lester Co.....Los Angeles
Waterhouse-Lester Co.....Oakland
Waterhouse-Lester Co.....San Francisco

COLORADO

*Auto Equipment Co.....Denver
*B. K. Sweeney Electrical Co.....Denver
Quinn & McGill Motor Supply Co....Denver

CONNECTICUT

Horton, Henry.....New Haven
*Mersick & Co., C. S.....New Haven
*Post & Lester Co.....Hartford

DISTRICT OF COLUMBIA

*Miller Bros. Auto & Sup. House., Washington
*National Electric Supply Co....Washington
*Rubel & Co., Charles.....Washington

FLORIDA

*Baughman Co., G. Norman.....Tampa

GEORGIA

*Alexander-Seewald Co.....Atlanta
*Elyea-Austell Co.....Atlanta

ILLINOIS

*Automobile Supply Co.....Chicago
Beckley-Ralston Co.....Chicago
Butler Bros.....Chicago
*Chicago Automobile Supply House..Chicago
Chicago Rubber Co.....Chicago
*Collins Co., E. B.....Danville
*Electric Appliance Co.....Chicago
*Graham-Seizer Co.....Peoria
*Hine-Watt Mfg. Co.....Chicago
Hibbard, Spencer, Bartlett Co.....Chicago
*Kimball & Co., E. D.....Chicago
*Motor Equipment Co.....Chicago
*Motor Car Supply Co.....Chicago
*National Electric & Auto Supply Co..Peoria
*Reid Motor Supply Co.....Quincy
Tenk Hardware Co.....Quincy
Western Electric Co.....Chicago

INDIANA

Central Rubber & Supply Co..Indianapolis
*Doherty, Sheerin & Co.....Indianapolis
*Gibson Co.....Indianapolis
Hearsey Co., H. T.....Indianapolis
*Holliday & Co., W. J.....Indianapolis
*Orr Iron Co.....Evansville
*Van Camp Hardware & Iron Co., Indianapolis

IOWA

Central Automobile Supply Co...Des Moines
*Fitch Co., R. F. & W. B.....Oskaloosa
*Herring Motor Co.....Des Moines
*Hippee Motor Supply Co.....Des Moines
*Repass Auto Co.....Waterloo
*Schultz Auto Supply Co.....Sioux City
*Sieg Iron Co.....Davenport
*Warnock Co., William.....Sioux City

KANSAS

*Auto Supply & Tire Co.....Wichita
*Auto Supply Co., The.....Hutchinson
Blish, Mize & Silliman.....Atchison
*Hagberg Rubber Co.....Wichita
Harwi Hardware Co., A. J.....Atchison
Lee Hardware Co.....Salina
*Southwick Auto Supply Co.....Topeka
*Shattuck-George Iron Co.....Wichita
Thompson Hardware Co., W. A. L..Topeka

KENTUCKY

Belknap Hardware & Mfg. Co....Louisville
*Cowan & Co., Andrew.....Louisville
Harbison & Gathright Co.....Louisville
*Louisville Auto Supply Co.....Louisville
*Warner Co., Roy E.....Louisville

LOUISIANA

*Electric Appliance C.....New Orleans
*Interstate Electric Co.....New Orleans
Lee Hardware Co.....Shreveport
*Shuler Rubber & Supply Co....New Orleans

MAINE

*Bragg & Sons, N. H.....Bangor
Bailey Co., James.....Portland
Cleveland Co., L. W.....Portland
Darling Automobile Co.....Auburn
Rice & Miller.....Bangor

MARYLAND

*Auto Supply Co.....Baltimore
Norris & Sons, R. W.....Baltimore

MASSACHUSETTS

American Motor Equipment Co.....Boston
Alsten & Goulding Co.....Worcester
Bigelow & Dowse Co.....Boston
*Boice-Perrine Co.....Boston
*Butts-Ordway Co.....Boston
Chapman & Brooks.....Springfield
Decatur & Hopkins Co.....Boston
Iver Johnson Sporting Goods Co....Boston
Iver Johnson Sporting Goods Co...Fitchburg
Iver Johnson Sporting Goods Co..Worcester
*Linscott Supply Co.....Boston
Motor Car Equipment Co.....Boston
½Post & Lester Co.....Boston
Standard Tire & Rubber Co.....Boston
*Tarbell-Watters Co.....Springfield
U. S. Rubber Co.....Boston
*Wetmore-Savage Co.....Boston

MICHIGAN

*Automobile Supply Co.....Detroit
*Automobile Equipment Co.....Detroit
*Becker Auto Supply Co.....Grand Rapids
*Bowman Co., E. A.....Detroit
Buhl Sons.....Detroit
*Cumings Bros.....Flint
*General Sales Co.....Detroit
Morley Bros.....Saginaw
*Roehm & Davison.....Detroit
Hall Co., Sherwood.....Grand Rapids
Saginaw Hardware Co.....Saginaw
Standart Bros.....Detroit
*Tisch Auto Supply Co.....Grand Rapids

MINNESOTA

*Electric Mfg. Co.....St. Paul
Farwell, Ozmun, Kirk Co.....St. Paul
Hardenberg, P. R. L.....St. Paul
Hudson & Thurber Co.....Minneapolis
Hackett, Gates & Hurty.....St. Paul
Janney-Semple-Hill Co.....Minneapolis
Kelly-How-Thompson Co.....Duluth
*Minneapolis Iron Store Co.....Minneapolis
Marshall-Wells Hardware Co.....Duluth
*Nicols, Dean & Gregg.....St. Paul
Nott Co., W. S.....Minneapolis
Plant Rubber Co.....Minneapolis
*Reinhard Bros. Co.....Minneapolis
Scheffer & Rossum Co.....St. Paul
*Sommers & Co., G.....St. Paul
*Smith & Co., C. J.....St. Paul
*Western Motor Supply Co.....Minneapolis
*Williams Hardware Co.....Minneapolis

MISSOURI

*Beck & Corbitt Iron Co.....St. Louis
*Bonniwell-Calvin Iron Co.....Kansas City
*Campbell Auto Supply Co., Fred..St. Louis
Campbell Iron Co.....St. Louis
*Equipment Co.....Kansas City
*Farmer Auto Supply Co.....St. Joseph
*Kansas City Auto Supply Co...Kansas City
Joplin Supply Co.....Joplin
*Missouri Auto Specialty Co.....St. Louis
*Motor & Machinists Supply Co.Kansas City
*Phoenix Auto Supply Co.....St. Louis
*Neustadt Automobile Supply Co..St. Louis
Richards & Conover Hardware Co., Kansas City
Sligo Iron Store Co.....St. Louis
Shapleigh Hardware Co.....St. Louis
Simmons Hardware Co.....St. Louis
Sickles Saddlery Co.....St. Louis
*Straus Saddlery Co.....St. Louis
Wyeth Hardware Co.....St. Joseph
Townsley Metal & Hardware Co., Kansas City

MONTANA

Northwestern Auto Supply Co.....Billings

NEBRASKA

*Korsmeyer Co., The.....Lincoln
*Nebraska-Buick Auto Co.....Lincoln
Omaha Rubber Co.....Omaha
*Powell Supply Co.....Omaha
*Paxton & Gallagher.....Omaha
*Paxton & Gallagher.....Auburn
*U. S. Auto Supply Co.....Omaha
*Western Automobile Supply Co.....Omaha
Wright & Wilhelmy Co.....Omaha

NEW JERSEY

*Economy Auto Supply Co.....Newark
Motor Car Equipment Co.....Newark
Thompson-Reilly Co.....Newark

NEW YORK

Albany Hardware & Iron Co.....Albany
*Bindrim, Julius.....Brooklyn
Barker, Rose & Clinton Co.....Elmira
*Davis-Browne Electric Co.....Ithaca
*Lowe Motor Supply Co.....New York
Motor Car Equipment Co.....New York
Martin-Evans Co.....Brooklyn
Marshall Co., A. H.....Plattsburg
Meyers Hardware Co., M. P.....Plattsburg
McRae & Co., H. A.....Glens Falls
Olmsted Co., The.....Syracuse
*Picard & Co., A. J.....New York
*Pruden Hardware Co., W. E.....New York
*Rickard Co., Jay A.....Schenectady
Roby Co., S. B.....Rochester
Syracuse Rubber Co.....Syracuse
Thompson, H. D.....Malone
U. S. Rubber Co.....Rochester
U. S. Rubber Co.....Syracuse
U. S. Rubber Co.....Buffalo
*Utica Cycle & Supply Co.....Utica
*Van Benschoten, John.....Poughkeepsie
*Whittemore-Sim Co.....New York

NORTH CAROLINA

*Carolinas Auto Supply House....Charlotte

NORTH DAKOTA

*Grant, J. D.....Fargo

OHIO

Bingham Co., W.....Cleveland
Bostwick & Braun.....Toledo
*Cooper Rubber Co., I. J.....Cincinnati
*C. & D. Auto Supply Co.....Cincinnati
*Fen Far Co.....Cleveland
*Griswold-Sohl Co.....Columbus
Hardware Supply Co.....Akron
Lockwood-Luetkemeyer-Henry Co., Cleveland
*M. & M. Co.....Cleveland
*Ohio Rubber Co.....Cincinnati
*Pennsylvania Rubber Supply Co., Cleveland
*Justus & Parker Co.....Columbus
*Roberts-Toledo Auto Co.....Toledo
*Schroyer & Co., G. W.....Dayton
Stanbaugh-Thompson Co.....Youngstown
*Toledo Rubber Co.....Toledo
*Toledo Tire & Supply Co.....Toledo
Toewater & Co., G. M.....Cincinnati
Tracy-Wells Hardware Co.....Columbus

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*Union Supply Co.....Toledo
Wagner Hardware Co.....Mansfield
Worthington Co., George.....Cleveland

OKLAHOMA

*Burwell-Smith Supply Co....Oklahoma City
*Burwell Supply Co., J. B....Oklahoma City
*Ratcliff-Sanders Grocer Co.....Tulsa
Richards & Conover Hardware Co., Oklahoma City
Severin Tire & Supply Co....Oklahoma City

OREGON

Archer-Wiggins Co. .....Portland
*Ballou & Wright.....Portland
Marshall-Wells Hardware Co.....Portland

PENNSYLVANIA

*Beers Bros. Co.....Oil City
*Berrodin Rubber Co.....Philadelphia
*Cahall Motor Supply Co.....Philadelphia
Doubleday-Hill Electric Co.....Pittsburgh
*Dyke Motor Supply Co.....Pittsburgh
Fry, Keyser .....Reading
*Gaul, Derr & Shearer Co.....Philadelphia
*Jackson Motor Supply Co.....Pittsburgh
*Johnstown Automobile Co.....Johnstown
*Lansing Hardware Co.....Scranton
Logan & Gregg Hardware Co....Pittsburgh
*Manufacturers Supplies Co.....Philadelphia
*McCullough & Son, J. B.....Philadelphia
Miller-Ecrot Co. .....Philadelphia
Nock Co., George W.....Philadelphia
*Pittsburgh Auto Equipment Co..Pittsburgh
*Roberts Electric Supply Co., H. C., Philadelphia
Supplee-Biddle Co. .....Philadelphia
U. S. Rubber Co.....Pittsburgh
*Woodwell Co., Joseph .....Pittsburgh

RHODE ISLAND

*Belcher & Loomis Hardware Co..Providence
*Goodby-Rankin Co. .....Providence
*Providence Auto Equipment Co..Providence
*Waite Auto Supply Co.....Providence

SOUTH CAROLINA

Bailey-Lebby Co. .....Charleston
*Cameron & Barkley Co.....Charleston
*Francke & Co., C. D.....Charleston

SOUTH DAKOTA

*Brownell Co., H. F.....Sioux Falls
Dakota Iron Store .....Sioux Falls
L. & L. Motor Supply Co.....Sioux Falls
Paxton & Gallagher Co.....Deadwood

TENNESSEE

Gray & Dudley Hardware Co.....Nashville
*Ozburn Automobile Supply Co.....Memphis
*Southern Auto Supply Co.....Chattanooga

TEXAS

*Electric Appliance Co.....Dallas
*Ferris-Dunlap Auto Supply Co.....Dallas
*Fisk Co. of Texas.....Dallas
*General Auto Supply Co.....Amarillo
*Hawkins Auto Supply Co., G. W....Houston
Krakauer, Zork, Moyes Co.....El Paso
Meyer Co., Joseph F.....Houston
Peden Iron & Steel Co.....Houston
Peden Iron & Steel Co.....San Antonio
*Spencer-Carroll Co. .....Waco
*Tri-State Motor Co.....El Paso
Walter Tips Co.....Austin
Western Motor Supply Co.....El Paso

UTAH

*Capital Electric Co.....Salt Lake City
*Intermountain Electric Co...Salt Lake City
Salt Lake Hardware Co.....Salt Lake City

VERMONT

*Hagar Hardware & Paint Co....Burlington

VIRGINIA

*Chemi Co. .....Richmond
*Crump Co., B. T.....Richmond
*Piedmont Hardware Co.....Danville
*Talman Auto Supply Co.....Richmond

WASHINGTON

*Automobile Supply Co.....Tacoma
Child, Day & Churchill Co.....Spokane
Holly-Mason Hardware Co.....Spokane
Marshall-Wells Hardware Co.....Seattle
Marshall-Wells Hardware Co.....Spokane
Seattle Hardware Co.....Seattle
Spokane Cycle & Supply Co.....Spokane

WISCONSIN

*Andrae & Sons Co., Julius .....Milwaukee
Auto Supply Co.....Milwaukee
*Gross Hardware Co., Philip.....Milwaukee
*Morley-Murphy Hardware Co....Green Bay
Pritzlaff Hardware Co., John.....Milwaukee
*Shadbolt & Boyd Iron Co.....Milwaukee
U. S. Rubber Co.....Milwaukee
*Western Motor Supply Co.....Milwaukee

WYOMING

Paxton & Gallagher Co.....Cheyenne

CANADA

*Canadian-Fairbanks Morse Co.....Montreal
*Cutten & Foster.....Toronto
*Hyslop Bros. .....Toronto
Marshall-Wells Co. .....Winnipeg
*Millen & Sons, Ltd., John.....Montreal
*Motor Car Supply Co.....Calgary
*Petry of Montreal, Ltd.....Montreal
Wood, Vallance & Co.....Winnipeg
Wood, Vallance & Co.....Hamilton, Ont.
Wood, Vallance & Co.....Calgary, Alberta

Associate Members

CALIFORNIA

Plummer Mfg. Co., W. A.....San Francisco

CONNECTICUT

Clover Mfg. Co.....Norwalk
Fitzgerald Mfg. Co.....Torrington
Hall-Thompson Co. .....Hartford
Raybestos Co.....Bridgeport
Rowe Calk Co.....Hartford

ILLINOIS

Atlas Auto Supply Co.....Chicago
Advance Felt Specialty & Cutting Co.Chicago
Atlas Specialty Mfg. Co.....Chicago
American Electric Co.....Chicago
Browne & Caine .....Chicago
Brunswick-Balke-Collender Co. .....Chicago
Chicago Fuse Mfg. Co.....Chicago
Edelman & Co., E.....Chicago
Findeisen & Kropf Mfg. Co.....Chicago
Federal Miniature Lamp Div. of General Electric Co.....Chicago
Gardner Governor Co.....Quincy
Halladay Co., L. P.....Streator
Illinois Brass Mfg. Co.....Chicago
Imperial Brass Mfg. Co.....Chicago
Ideal Sheet Metal Works .....Chicago
Jefferson Electric Mfg. Co.....Chicago
Metal Spec. Mfg. Co.....Chicago
Mayo Mfg. Co.....Chicago
Nelson Mfg. Co., A.....Chicago
Niehoff & Co., Paul G.....Chicago
Premier Electric Co.....Chicago
Peoria Overhead Washer Co.....Peoria
Rhoades & Co., Jas. H.....Chicago
Stanwood Equipment Co.....Chicago
Sunderland Mfg. Co.....Chicago
Tuthill Spring Co.....Chicago
U. S. Ball Bearing Mfg. Co.....Chicago
Van Cleef Bros.....Chicago
Vesta Accumulator Co.....Chicago
Warner Lenz Co.....Chicago
Weaver Mfg. Co.....Springfield
Weidenhoff, Jos. H.....Chicago

INDIANA

Double Fabric Tire Co.....Auburn
Crum-Wiley Co. .....Peru
Gates Mfg. Co.....Indianapolis
H. & D. Co.....Goodland
Indiana Lamp Co.....Connersville
Oakes Co., The.....Indianapolis
Wheeler-Schebler Carb. Co.....Indianapolis

IOWA

C. & E. Mfg. Co.....Marshalltown
Midland Supply Co.....Davenport

KANSAS

Crum Mfg. Co.....Ottawa

MASSACHUSETTS

Gray & Davis, Inc.....Boston
Hill-Smith Metal Goods Co.....Boston
Mossberg Co., Frank .....Attleboro
Motor Specialties Co.....Waltham
Walden Mfg. Co.....Worcester
Wonder-Mist Co.....Boston

MICHIGAN

Edmunds & Jones Corp.....Detroit
Gearless Differential Co.....Detroit
Hayes Mfg. Co.....Detroit
Lockwood, Ash Motor Co.....Jackson
New Era Spring & Specialty Co.....Detroit
National Standard Co.....Niles
Piston Ring Co. .....Muskegon
Sparks-Withington Co. .....Jackson
White Star Refining Co.....Detroit

MINNESOTA

Durkee-Atwood Co. .....Minneapolis

MISSOURI

Carter Carbureter Co.....St. Louis
Curtis Pneumatic Machinery Co....St. Louis
Kant Leek Mfg. Co.....St. Louis
McQuay-Norris Mfg. Co. .....St. Louis
Nu-Back Mfg. Co.....St. Louis
Pull-U-Out Sales Co.....St. Louis
Shurnuff Mfg. Co.....St. Louis

NEBRASKA

Haney & Co., J. H.....Hastings

NEW JERSEY

Asbestos & Rubber Works of N. J...Camden
Endurance Tire & Rubber Co.New Brunswick
Hartford Co., Edw. V., Inc.....Jersey City
Klaxon Co. .....Newark
Rajah Auto Supply Co.....Bloomfield
Splitdorf Electrical Co.....Newark
Tingley & Co., Charles O.....Rahway
Thermoid Rubber Co.....Trenton
Voorhees Rubber Co.....Jersey City
Whitehouse-LeCompte Mfg. Co.....Newark

NEW YORK

Automobile Supply Mfg. Co.....Brooklyn
American Ever Ready Works, Long Island City
Brunner Mfg. Co.....Utica
Benford Mfg. Co.....Mt. Vernon
B. & L. Auto Lamp Co.....New York
Corning Glass Works.....Corning
Crescent Tool Co.....Jamestown
E. A. Laboratories Co.....Brooklyn
Empire China Works.....Brooklyn
Grossman Mfg. Co., Emil.....Brooklyn
Herz & Co.....New York
Indian Refining Co.....New York
Johns-Manville Co., H. W.....New York
Judd & Leland Mfg. Co.....Clifton Springs
Kellogg Mfg. Co.....Rochester
Keyless Auto Clock Co.....New York
Laminated Shim Co.....New York
Livingston Radiator & Mfg. Co....New York
Mosler & Co., A. R.....Mt. Vernon
Metal Stamping Co.....Long Island City
Moto-Meter Co. .....New York
Manhattan Electrical Supply Co...New York
Manzel Bros. Co.....Buffalo
New York & New Jersey Lubricant Co., New York
West Side Foundry Co.....Troy
Piel Co., G.....Long Island City
Platt & Washburn Refining Co....New York
Schlesinger-Redburn Corp. .....New York
Sears-Cross Co. .....Brooklyn
Stevens & Co.....New York
U. S. Light & Heat Corp.....Niagara Falls
Wolverine Lubricants Co.....New York

OHIO

Au-To Compressor Co.....Wilmington
Adamson Mfg. Co.....East Palestine
Ashland Mfg. Co.....Ashland
Brown Spring Oiler Co.....Cleveland
Bigsby-Rotary Mfg. Co.....Cleveland
Champion Spark Plug Co.....Toledo
Central Brass & Fixture Co.....Springfield
Caskey-Dupree Mfg. Co.....Marietta
Columbus Varnish Co.....Columbus
Dall Motor Parts Co.....Vermilion
Davies-Young Soap Co.....Dayton
Firestone Tire & Rubber Co.....Akron
Globe Machine & Stamping Co.....Cleveland
General Tire & Rubber Co.....Akron
Gordon Co., J. P.....Columbus
Heinze Co., John O.....Springfield
Hoover Co., W. H.....New Berlin
Jiffy-Jack Co. .....Cleveland
K-W Ignition Co.....Cleveland
Lawson Co., F. H.....Cincinnati
McGraw Tire & Rubber Co....East Palestine
Marvel Accessories Mfg. Co.....Cleveland
Northwestern Chemical Co.....Marietta
National Carbon Co.....Cleveland
National Motor Supply Co.....Cleveland
Peters & Herron Dash Co.....Columbus
Packard Electric Co.....Warren
Perkins-Campbell Co. .....Cincinnati
Reflex Ignition Co. .....Cleveland
Sharp Spark Plug Co.....Cleveland
Standard Welding Co.....Cleveland
Sterling Mfg. Co.....Cleveland
Temco Electric Motor Co.....Leipsic
Victor Lamp Co.....Cincinnati
Victor Rubber Co.....Springfield
Vichek Tool Co.....Cleveland

PENNSYLVANIA

American Bronze Co.....Berwyn
Atwater Kent Mfg. Works.....Philadelphia
Crew-Levick Co. .....Philadelphia
Commercial Lubricating Co.....Philadelphia
Goodrich-Lenhart Mfg. Co.....Philadelphia
Silvex Co. .....South Bethlehem
Standard Steel Box Co.....Bridgeville

RHODE ISLAND

Auto Parts Co.....Providence

SOUTH CAROLINA

General Asbestos & Rubber Works.Charleston

TENNESSEE

American Lava Co.....Chattanooga
Continental Piston Ring Co.....Memphis

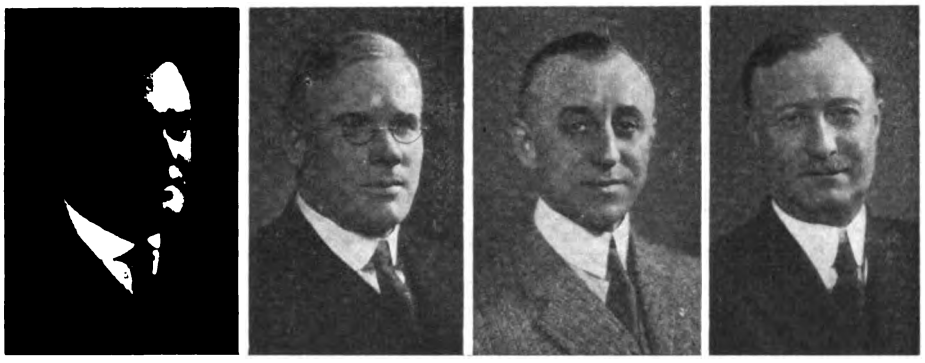
WASHINGTON

Romort Mfg. Co.....Seattle

WISCONSIN

American Brass Foundry Co.....Milwaukee
Auto Parts Mfg. Co.....Milwaukee
Federal Rubber Mfg. Co.....Milwaukee
Fulton Co., The.....Milwaukee
Gemco Mfg. Co.....Milwaukee
Higgins Spring & Axle Co.....Racine
Harvey Spring & Forging Co.....Racine
Milwaukee Auto Eng. & Sup. Co..Milwaukee
Shaler Co., C. A.....Waupun
Walker Mfg. Co.....Racine

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OFFICERS OF BUFFALO AUTOMOBILE DEALERS ASSOCIATION

E. G. Oliver, V.-President | Chas. B. Kane, Treasurer | J. A. Cramer, Director | J. J. Gibson, Secretary

Buffalo's Wealth During The

So Her Dealers Forward To

BUFFALO, N. Y., Jan. 31—Buffalo's fifteenth automobile show, which was held in the Broadway Auditorium by the Buffalo Automobile Dealers' Association, ending Saturday, was the beginning of a year of unprecedented sales, the dealers believe.

They do not base their predictions upon flimsy foundation, for they point a confident finger at figures, which show that Buffalo and western New York, of which Buffalo is a part, enjoyed a year of almost unbelievable prosperity in 1916.

Buffalo was a pauper in 1915, compared to her wealth to-day. She seems to have taken leaps and bounds up the steps of prosperity.

The per capita wealth of Buffalo was $847 in the beginning of 1915 and to-day, when a new year is dawning, the per capita wealth is $1,466.

During 1916, 23,968 cars were regis tered in Erie county. It is figured that 90 per cent of this total were Buffalo automobiles. In 1915, 18,299 cars were registered in the county.

Buffalo is the handle of a fan, which extends into these counties: Niagara, Chautauqua, Cattaraugus, Allegheny, Wyoming, Genesee, Orleans and Livingston and what has been said of Buffalo may be said of the cities and larger towns, which are located in these counties. Reports coming from them indicate that they are unprecedentedly prosperous.

Niagara Falls and Lockport are both progressive cities close to Buffalo. They are making lengthy strides toward wealth, as is denoted by their bank clearances and the manner in which they are building and expanding. Lockport's per capita wealth is exactly $1,000, according to a report in one of its newspapers.

Buffalo, like other larger cities, has had her share of prosperity, which flowed and is still flowing from the war. She has either within her limits or close to her outskirts four big munitions factories working day and night.

These plants are the Lackawanna Steel Co., the Copper and Brass Rolling Mill, the Donner Steel Co., Inc., and the New York State Steel Co. They employ thousands of men and these men are getting the best of wages.

Buffalo showed her heels to all other cities in the amount of money that was deposited in her banks. Even Detroit, which has shot up like a mushroom in



From one end, the big armory in which the Buffalo show is held

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early Doubles ear 1916

nfidently Look cord Sales



OFFICERS OF BUFFALO AUTOMOBILE DEALERS ASSOCIATION

Dal H. Lewis, Show Manager | M. B. Hatch, President | C. F. Monroe, Director | A. W. Meyer, Director

the past few years, could not touch her.

According to the statement of the clearing house for the year 1916, this city's bank clearances amounted to $797,808,303, as compared to a total of $611,114,647 in 1915. This was an increase of $186,693,656. In 1916 the total of the balances reached $115,599,013, while the aggregate for 1915 was $678,499,413, or an advance amounting to $37,699,600. This city's increase in clearances was 30 per cent and her advance in balances was 47 per cent.

In 1916 this city's real property was assessed for a total value of $351,990,620 and her personal property was supposed to be worth $14,051,200, according to the records of the assessors' office. When the tax books were opened for inspection on Jan. 1, radical changes were noted. Her real property will be assessed for a total of $493,546,940 this year. This is an increase of $141,556,320. Her personal property will be assessed for a value of $69,230,300 or an advance of $55,179,100.

And her special franchises assessments were increased considerably. There was a total enlargement of real and personal property valuations amounting to $196,786,620 and the special franchise assessments were increased in value to the extent of $4,000,000, making a net gain in assessed valuations of $200,786,620.

Buffalo has been promised a tax rate of $20 for 1917. She will surely get it. Last year her tax rate was $30 per thousand. This will save the taxpayers many thousands of dollars and will be invested in some other way.

A table recently formulated by the federal government for the Chamber of Commerce giving census figures indicative of the progress and prosperity that Buffalo is enjoying. It covers the Buffalo Metropolitan District and discloses the fact that the district's capital amounted to $347,593,836 in 1914 as compared to $280,052,887 in 1909.

A glimpse at the valuations on real and personal property within the city limits will disclose that the vast increases that have been effected in them is one of the basic reasons why Buffalo's wealth has been enormously increased.

A total of 4744 building permits were issued in 1916. They represented an investment of $13,137,000. This compares most favorably with the figures of the

(*Continued on page* 43)



:h year presented the appearance of a mammoth flower garden

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Baltimore Has a *Buying* Show

Cars Listing at Over $1,000 Go Well and Dealers Really Get the Cash—More Than 55,000 Cars Will Carry Maryland Licenses in 1917

BALTIMORE, Jan. 27—Baltimore's show, which closed to-night at the Fifth Regiment Armory after a five-day exhibition, was the most successful in point of attendance, sales and prospects developed of the eleven shows that have been held here. General Manager H. M. Luzius of the show committee of the Baltimore Automobile Dealers' Association and the Automobile Club of Maryland, under whose joint auspices the event was held, declared that this year's show proved to be a bigger success than any of its predecessors, despite the fact that the night charge throughout the week was 50 cents for admission, double the usual night charge, the day charge being 25 cents.

The only slight rift to mar the show from an attendance standpoint was that of Thursday night, always billed as "Society Night," on which occasion the custom has been to double the admission. The opinion which prevailed that it would cost $1 to come Thursday night held back the evening crowd, although the afternoon crowd was very large. For the first time the buying began in the opening days of the show and a canvass showed many healthy sales, some of which were completed on prospects and others developed right at the show.

High Grade Cars Sell Well

High grade cars, all above $1,000, sold well, and big selling by lines above $2,000 were also made. The country dealers came to the city early and dealers having the entire state closed many contracts for the season. Herbert M. Hartman, vice-president and general manager of the Zell Motor Car Co., Peerless and Chalmers distributor, reported that for the first time in years his firm was able to get real money from rural customers at show time for good size delivery orders for the coming year. The Zell experience was typical of many of the other dealers. Not alone did dealers come from Maryland, but Virginia, West Virginia and both the Carolinas had representatives in attendance.

The Baltimore territory, which includes the state for some dealers and seven counties for the majority, the others being handled in the most instances out of Philadelphia and Washington, proposes to sell between 30 and 45 per cent more cars during the coming year than in 1916. The registration for 1916 shows 39,419 pleasure cars; 4445 commercial cars and 1755 dealers. In 1915, there were 27,858 pleasure cars, or 11,561 less than 1916; 3189 commercial vehicles, or 1256 less than 1916. In 1916 there were 1341 dealers, 414 more than in 1915.

Expect a Healthy Gain

The Automobile Commissioner expects that there will be more than 15,000 more cars registered in Maryland in 1917 than last year, which will make about 55,000 cars bearing Maryland licenses. The District of Columbia is forced to use Maryland licenses there being no exchange between the district and the State of Maryland. The first half of 1917 showed 18,100 cars registered, in the same period of last year only 10,000 pleasure cars had been licensed an increase of over 80 per cent.

This year for the first time the show was exclusively for pleasure cars and 53 dealers were represented, showing 221 cars. More than 30,000 visited the show, the big attendance day being 7000, which was Friday, there being more paid admissions on that day than on Tuesday evening, the opening night—Automobile Club Night—when about 8000 passed through the gates. The attendance increased about 15 per cent over last year, despite the increase in the admission charge.

A feature of show week was the holding of truck exhibitions throughout the city by the dealers and the use of a bus to send prospects to all of the show rooms, where trucks were on display. The result of this show, commercial dealers say, will be the increase of about 40 per cent to 50 per cent more commercial vehicles in 1917.

Baltimore was never more prosperous than at this time. The bank clearings, according to the clearing house for 1916 was $2,206,338,952, an increase over the preceding year of $372,689,955, the clearings for 1915 being $1,833,648,997. This increase occurred despite the fact that the Federal Reserve Bank ordered certain out of town transactions should not pass through the clearing house, but through the Federal Reserve Bank and direct to the banking institutions on which the paper is drawn.

Big Corporations Move In

Although the last Government census showed Baltimore to have a population of 558,485, the city authorities now place the population at 595,000. Baltimore has been fortunate in attracting many big corporations within the last few months. That is, the big corporations have established plants just a few miles outside of the city limits and millions of dollars have been invested.

Charles M. Schwab, of Bethlehem fame, will spend $50,000,000 at Sparrows Point in improvements and general construction on the Maryland Steel plant, which is now known as the Pen-Mary Steel Co. J. E. Aldred, the New York financier, is heavily interested in Baltimore, and is responsible for the location here of the $8,000,000 aluminum reduction plant.

The Prudential, a $5,000,000 oil company, has erected a $2,000,000 plant at Curtis Bay. The Standard Oil Co. is working on $1,000,000 expenditure for improvements. The Poole Engineering Co., Texas, a $3,500,000 corporation, is showing big strides. All of the railroad companies are expending millions in improving terminals and other shipping facilities. The net result of all of the big capital being invested has been to attract thousands of skilled workers and to improve the pay of many that have long been engaged here.

This city, which is regarded as one of the greatest home cities of the country on account of its thousands of two-story marble-front homes, is a ready market for cars. Evidence of that may be found in that already back-yard garages have sprung up all over the city and public garages have been increased by at least 10 per cent in number but more than 50 per cent in capacity. Spar-

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rows Point alone will shortly show a tripling of its employment to about 15,000 workers. The old firm employed in the neighborhood of 5000. These workers are of a high grade, and many of the Baltimore dealers have branches established at the point.

Baltimore's business operations aggregate more than $1,000,000,000, with manufactures leading. Clothing alone showed $40,000,000. Copper, tin and sheet iron amount to $30,000,000 and slaughtering and meat packing $20,000,000. The jobbing trade of Baltimore, not including commission business, reaches $300,000,000, dry goods, clothing, boots, shoes, hats, notions and millinery being the chief items.

The rural section of Maryland shows the State to be wealthy, the estimated farm value being $286,167,028. Of this amount, $163,451,641 is the land value, $78,285,509 in buildings, $11,859,771 in implements and machinery, and $32,570,134 in live stock. There are 48,923 farms in Maryland. A compilation of the crops for the last year for the chief staples—corn, wheat, white potatoes, hay and tobacco—places the value above $80,000,000.

Baltimore has been selected as one of the cities to have a farm loan bank, and this will mean increased business for the city and bring more farmers into the city than ever before.

More than a scorce of new car-selling companies have come into existence in Baltimore during the past year. One of the most noteworthy features for the trade was the creation of a real row along Mount Royal Avenue, which had been in the making for a long time. Besides this, there have sprung up all over town new garages and accessory firms. What formerly was a vacant grass plot in front of the Lyric, Baltimore's opera house, has been transformed into ten showrooms.

Most Spaces Well Laid Out

Few Dealers Make the Mistake of Over-Crowding Their Exhibits—No Rugs Permitted

BALTIMORE, Jan. 27—From a scenic point of view the show was pleasing to the eye, and visiting factory representatives pronounced it as one of the finest shows of the year. The wide expanse of clear space, there being no columns, permitted the displaying of machines to advantage on the center. A false ceiling of Oriental design, with hundreds of 100-candle-power electric lamps, gave a bright glow to the place. Canopies showed the division of all the spaces in the center and smilax trailed about. An abundance of potted plants throughout the place gave it a very inviting setting.

Only a few of the dealers made the mistake of overcrowding their space. This was due in a measure to some of the small fellows selling portions of their space to dealers who had not obtained space.

The exhibit of the Lambert Automobile Co. was one of the most distinctive. The space was exceptionally large, and the Hudson line was well displayed. Liveried attendants stood near the various closed models. They wore bright liveries trimmed with broad gilt braid.

The Saxon exhibit created a good deal of comment. Manager H. W. Bowker used four scales to show the weight of the car was evenly distributed in a touring car.

All told, no less than two dozen chassis were shown, and in most instances factory men were the demonstrators. Charts, with parts tastefully arranged, also attracted a great deal of attention at the less than a score of exhibits that had them on show.

The Winton company had a most inviting display, which was very carefully as well as tastefully arranged, and more than a scorce of persons occupied the space at a given time without showing any semblance of crowding.

The dealers were not permitted to place rugs about their exhibits, as in past years, the entire floor being covered with an imitation maroon linoleum. Wicker furniture, such as lounging chairs and settees, was used. Many of the exhibitors had large bouquets of bright colored carnations on small center tables, which added a great deal to the attractiveness.

BUFFALO'S WEALTH NEARLY DOUBLES

(*Continued from page* 41)

two previous years as follows:

	Permits	Value
1914	3,975	$10,709,000
1915	4,809	11,798,392
1916	4,744	13,137,000

Buffalo is surrounded by an agricultural country, where under ordinary conditions the crops are unsurpassed by any of those in the entire country. She eats the apples, potatoes, peaches and wheat that grow in her backyard. Crops were not normal in 1916. Weather conditions proved too much for them. Rain fell almost continuously during the first half of the summer and then a drought set in. It ruined crops worth hundreds of thousands of dollars.

Lake freighters carried into Buffalo in 1916, 191,000,000 bushels of grain. Three thousand five hundred and eleven vessels cleared this port, as compared with 3475 in 1915. Eighty freighters are wintering in the harbor. They are loaded with 23,700,000 bushels of grain. Buffalo's elevators contain 13,000,000 bushels.

According to statistics kept by the federal government the State of New York produced crops worth $293,329,000 in 1916, as compared to $267,725,000 in 1915

Western New York Did Its Part

Buffalo dealers, who do business in every section of western New York, which is regarded as their territory, expect this year's sales to surpass those of any preceding year. They believe that Buffalo will be even more prosperous in 1917 than in 1916.

Johnson Colorado's Delegate

DENVER, COL., Jan. 23—The motor car industry in Colorado and adjacent Rocky Mountain territory will be represented at the San Francisco show by E. J. Johnson, of Denver, Chalmers distributor for Colorado, Wyoming and New Mexico. For the benefit of the Automobile Trades Association of Colorado, which is planning to hold a show next fall, this one member to attend the big event on the Pacific coast will study the trades body methods of conducting that exhibition.

McArthur Brothers' Bonus Plan Wins

PHOENIX, ARIZ., Jan. 29—McArthur Brothers, dealers in Dodge, Jeffery and Packard cars, have found a successful bonus plan. Recently they offered a $5 monthly bonus to each employee if the company did more than $50,000 business a month. The goal was reached and passed each month after that. Now the scheme is a $5 bonus if the receipts are $85,000; and $1 for every additional $25,000.

Warner Mails Envelope Inserts

CINCINNATI, Jan. 29—The Warner Auto Top Co. is sending a number of envelope inserts describing their upholstery covers to dealers to be used as advertising matter and enclosed in bills to customers and other correspondence.

Minneapolis Show Prizes for Dealers

MINNEAPOLIS, Jan. 29—The Minneapolis Automobile Trade Assn. offers the following prizes for the dealers who bring the largest number of friends to the Minneapolis show, Feb. 3-10: First prize, $50; second, $25; third, $15; fourth, $10.

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64,000 Motor Cars

That's What Michigan Dealers Will Sell During The Year 1917—and They Have An Unprecedented Era of Prosperity To Back Up The Prophecy

DEALERS in Michigan will sell more than 64,000 motor cars in 1917. The sales of the past and the unprecedented prosperity of the present can be accepted as a basis for that prediction. In 1914 there were 81,000 cars registered with the Secretary of State, in 1915 114,700, while 1916 witnessed the growth of registration to 160,000, which when combined with the remarkable financial prosperity of every country and town should mean that over 215,000 automobiles will be sold to owners before the current year ends.

Michigan has passed through a wonderful change in the last few years. It has dropped the plow and the reaper for the forge and the foundry. It is now one of the greatest industrial centers of the United States, if indeed it is not the greatest. And its industries have enjoyed a growth unknown to history; an advancement that has given its population wages, continuous work and a healthy stability, and has made the motor car buyer of the mechanic, the factory foreman, the factory superintendent, and in fact of all of its workers.

Every city of consequence has its quota of motor car or motor car parts makers and factories and its aeroplane plants, while those who devote their energies in other directions have gained in the increase in business induced by the present prosperous era and the increasing financial power of the state wrought by the growth of the wonderful automobile industry.

DETROIT has increased its industrial output by more than $300,000,000 in the last year, and for the 12 months of 1916 manufactured $900,000,000 worth of materials as compared with $600,000,000 in 1915, besides adding more than 100,000 people to its boundaries and making a total population of 780,000 persons.

The automobile industry within the city manufactured approximately 950,000 cars at a value of $600,000,000, as compared with 455,000 cars valued at $335,000,000 in 1915, which means that a trifle less than $12,000,000 worth of motor cars were made and shipped from Detroit during each week of the past year.

Immense Motor Car Industry

In 1915 57,793 people were employed by 31 companies making or assembling automobiles, and 23,801 worked in 113 factories whose sole or principal business was the making of motor car parts or accessories, while in 1916 more than 130,000 people have been employed at the same occupations. In 1915 the wages paid to motor car workers amounted to $67,000,000, as compared with $120,000,000 paid in 1916.

Other Things Besides Cars

In addition to this one industry Detroit is making 1700 stoves per day, manufacturing 1,000,000 cigars every 24 hours, building various structures at the rate of 55 and the expense of $170,557 daily, and making bank clearings averaging $7,535,249 for each day in the year. Bank clearings for 1916 amounted to $2,260,574,784.16, a gain over 1915 of $775,602,134.83, which was an increase of 52 per cent.

Building construction for 1916 was $51,067,110, a gain of $19,831,760, an increase of 62 per cent. Besides which Detroit has the largest exclusive chair factory, rubber-covered wire plant, sheet copper and brass rolling mills and automobile wheel factory in the world. So that it is not surprising to find that its total bank deposits amounted to $285,087,000 at the end of the average week of business in 1916, which was an increase of $8,257,000 above the average of the preceding year. Nor is it surprising to discover that the great majority of the more than 40,000 car owners within the city are workmen in these amazing factories.

Similar conditions prevail throughout the State. The iron industry at Marquette, Negaunee and Ironwood has been working at its utmost capacity, and in consequence is adding to the general prosperity.

The Importance of Flint

Flint has been growing beyond all bounds until it is now a city of more than 60,000 people; a thriving and hustling community that has overwhelmed the former farming town of 13,000 persons. Flint now is a motor car center, and is enjoying all of the prosperity that industry is creating. It had bank clearings for the first six months of 1916 amounting to $25,723,223.44, and it is estimated that the year's total will amount to $51,446,446.88 as against $16,643,002.68 for 1915. It is erecting new structures at the rate of $5,000,000 a year, and is paying wages to workers amounting to $18,540,000 a year.

Pontiac, another motor car center, has recently witnessed the addition of many new concerns and looks forward to a business of $50,000,000 within the com-

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ing year, and the employment of more than 2550 men with yearly wages totaling more than $1,135,000.

Lansing, where the motor car companies have enjoyed the greatest year in their history, looks for a still greater 12 months for 1917, and predicts that the several new companies starting there will add to the prosperity the city is now having. Jackson, Saginaw, Benton Harbor, St. Joseph and practically all of the cities of simillar size have new concerns embarking on large manufacturing and old ones that have had the same remarkable prosperity that has visited those mentioned.

Grand Rapids Has Greatest Year

At Grand Rapids the furniture makers and brass factories and canning concerns have had the greatest financial business in their history, coming to a certain extent, no doubt, with the influx of wealth that the motor car industry has brought the State, and aided further by the general prosperity of the State. The city is also adding new motor car, furniture and leather factories that will add to the bank clearings, the wages paid and the population during 1917. Already it is demonstrating that this year will be an even greater one than 1916 by the fact that buildings are being erected at a rate that is 40 per cent higher than that of the first 3 weeks of 1916.

At Muskegon, where the population is displaying an unusual interest in aeroplanes and is erecting several factories for their manufacture, business has been good, due in great part to the large tire plant there, which now plans to double its capacity and will therefore double its payrolls and number of workers, and will be an even greater cause for prosperity during this year, while the new aeroplane factories will probably commence production in the near future and thus add to the city's growth.

At Niles, Kalamazoo, Three Rivers and Battle Creek the farmers report favorably on crops.

Summing up these conditions, there is no doubt that the dealers who look forward to the greatest motor car business they have ever had will find it up to and probably beyond all their expectations—that the present average of one car to each fifteen people in the State will be cut down until it is one car to each ten or less.

Detroit's Finest Show in 10 Years

Dealers Had to Buy a Tabernacle To Get Show All in One Building

TICKETS ELIMINATED

Instead, Half Dollars are Dropped in the Box and Trouble Forestalled

DETROIT, Jan. 25—Detroit is having the best motor car show this week that it has held in its 10 years of show experience. One reason is that the show is all in one building. Last year it was held in three separate buildings on the river front. The building being used is the tabernacle that was built out Woodward Avenue for Billy Sunday.

It contains 74,000 ft. of floor and is a pretty fair building compared with what the Detroit Automobile Dealers' Association has had to put up with in the past. But at that it is full of posts, the ceiling is low, the roof leaks once in a while in spots—but not very much—and it is at best a make-shift autotorium.

The dealers—and many other business men in Detroit—are keen for an auditorium. Every one admits the need of it. The World's Salesmanship Congress last summer was handicapped for suitable quarters and no big convention or exhibit can be well staged for lack of room.

The dealers are working under quite a handicap. To start with, they had to buy the tabernacle, but when they get through they can sell it back as salvage. And then they had to side it up, put in a floor in place of Billy's sawdust, fix the roof and get it in the decorations. It cost them $47,000, not including the cost of the building.

As to the Show

The show itself is a good show. There are the usual number of exhibitors, all in smaller space than they wanted, and a lot who couldn't get in at all. Some day maybe there will be a show somewhere where everybody who wants to get in can get all the space he wants.

The decorations are Japanese, with Jap pictures, Jappy painting, and what looks like Japanese writing, although the dealers are suspicious about the latter.

The car exhibits are in one big whole, with no divisions, and are somewhat crowded. One end of the show is devoted to trucks and the accessories occupy side spaces.

No Tickets

The free ticket nuisance has been nicely dealt with. There are no tickets. Admission is by fifty-cent pieces. Outside the doors are change booths where visitors may get half dollars, and at the doors are turnstiles and registers where visitors throw the half dollars into tin boxes.

If any one asks a dealer for free tickets the dealer is obliged to say that there are no tickets, but that he will gladly give the "asker" fifty cents—and the man who will accept fifty cents is a scarce article.

There are a few press tickets, but they are a small percentage of the free tickets that have been distributed in other years at the previous Detroit shows.

This year exhibitors are admitted by the familiar button-and-return-check arrangement. Last year the manager used single admissions throughout and gave each dealer a certain number of passes, which arrangement was not at all liked, for when the passes ran out some of the dealers had to pay to get even their porters in, even though the porters were worth it.

The show is managed this year by H. H. Shuart, who last year was publicity man and assistant to Walter Wilmot, the then manager of the

Should Detroit Have a National Show?

SEVERAL of the dealers at the Detroit show expressed the opinion that, aside from present disadvantages which make it impossible. Detroit would be the logical place for the national show of the West.

The main contention is that it would permit dealers, who come to see the cars, to see the factories and get in direct touch with the organizations in their headquarters, where all members would be available. Also, it would permit access to financial reports and all data necessary to the signing up of dealers in vacant territory instead of, as is often done, delaying this until an after-the-show investigation.

The principal reasons why this cannot now be done and probably could not be done for several years is that Detroit has no building big enough and has not hotels enough to take care of the visitors for such an enormous exposition. Chicago, with its many times greater facilities, is heavily taxed.

Those who talk of the subject, however, express the belief that as Detroit continues to grow at its present rapid pace it may at some perhaps distant date make a legitimate bid for a national exposition. This much is sure: If Detroit ever believes it is entitled to such a show it will not hesitate to ask for it.

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show. Show Manager Shuart is assistant secretary of the association and has had success with this year's show.

The no-smoking rule is rigidly enforced and the show is kept clean and free of papers and discarded literature. A close watch is being kept on "gyps" who in past years have gotten in, representing various wares, and have made themselves obnoxious.

The show is being well supported by the newspapers which always get behind anything pertaining to automobiles. There is a great local pride in Detroit's industries.

The officers of the association are: President, W. J. Gordon; vice-president, Charles E. Baker; secretary, Walter J. Bemb; treasurer, A. L. Zeckendorf; assistant secretary, H. H. Shuart.

Detroit's Growing Motor Car Trade

Year	1914	1915	1916	1917 (Estimated)
Registrations..	81,000	114,700	160,000	224,000
Cars sold.....	....	33,700	45,300	64,000
Per cent gain..	....	41.5	40	40

Intensive Merchandising Grows

Though There is Little Individuality in Exhibits—Prospects Better Looked After

By Ray W. Sherman

DETROIT, Jan. 26—Intensive merchandising is making itself more apparent this year at shows than during past seasons. It showed itself in the New York show and is present sporadically in the Detroit show.

Not a great deal has been done toward making the individual exhibits stand out; and this is, it is true, not easy where there are no backgrounds and no divisions between the exhibit spaces. This lack of divisions does not lend to individuality of effort, and tends to make the show one great mass of cars, which is to a considerable extent confusing to the man who enters the show and casts his eye about, especially on his first look.

The Best Staged Exhibit

Probably the best staged exhibit is that of the Bemb-Robinson Co., handling the Hudson. The space is difficult to handle, but cars of special finish have been introduced, rugs and stepping boxes have been placed in front of some of the cars, and at the doors of two of the enclosed models are uniformed footmen, drafted from Remb's organization and uniformed in costumes procured in New York at considerable expense.

To harmonize with the Japanese decorative scheme of the show the license numbers on the cars are in a Japanese scrawl, and catalogs are distributed by two young Japs—real ones—in correct costumes made at the direction of the Japs themselves.

At the back of the exhibit, to some extent cutting it off from the next space, is a Japanese screen and a table with a huge dish of flowers.

The Winton branch has introduced rugs and boxwood trees to good effect, and the Neumann-Lane Co. has carpeted its Pierce-Arrow, Jeffery and Rauch & Lang exhibit with a green matting, which looks well indeed. There also are rugs in the L. J. Robinson Co.'s space.

Real Intensive Merchandising

Intensive merchandising has entered also into the working of the sales forces. In the Grasser Motor Co.'s space are eight salesmen and four cars. One salesman is detailed to each car and as he becomes busy one of the others moves forward from wherever he may be and relieves the busy salesman if occasion demands it.

The salesmen also work in shifts so that the whole force is on during the evening.

In the Bemb-Robinson organization morning meetings are held, and also in the L. J. Robinson organization.

The LeVeque-Baston sales force is divided similarly to that of the Grasser company. Baston, a Metz expert, devotes his time to the Metz, and the others stay by the Pullman and Apperson.

Keeping the Prospect Files

Here and in the Grasser exhibit the prospect files are kept in the exhibit and cards made out during the day by salesmen are turned in at night. Immediately the next morning a letter is sent to the prospect, and if he is live enough he is made the object of a personal call at once. Little literature is used anywhere in the show, the Grasser theory seeming to summarize the general ideas, which are that lack of literature is an economy and furnishes an excuse for following-up the prospect later.

One of the best examples of intensive sales work is in the organization of George W. Franklin, handling the Dort. Prior to the show Sales Manager Thomas H. Walker decided that there was no good reason why the week before the show should be the dull week it usually is. He called a meeting of the staff of four salesmen, laid the proposition before them and began work.

A Sunday ad was run in the newspapers and to all prospects and owners was sent a strong follow-up letter. The owners were advised that now was the best time to trade if they wanted a new car before spring or by spring.

The salesman hit it up to top speed and a lot of good calls were made. The result was that where the week might have been void of business ten cars were sold by the four men. And that left the waverers safe and the deck clear for the show. During the show the same intensive work was continued and the indications are that the results will be pleasing. Of the ten sales six were of enclosed cars.

To eliminate future classification work the LeVeque-Baston company clips the corners of all prospect cards secured at the show. This avoids all show notations and is of value as guidance later on.

RENEW OLD ACQUAINTANCES

LOOK over to the next page and see if you can recognize some of the old-timers who attended the Detroit Show.

THESE are the men who have grown up with the industry—watched it out of its swaddling clothes—and piled up a stack of iron men while doing it.

Know Any of Them?

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"Should Old Acquaintance Be Forgot—"

Some Old-timers at Detroit's Show

George Yokom, Port Huron, is one of the state's motor pioneers. He started so far back no one can remember his early history beyond that he has handled the Buick, Overland, Ford and Olds for years and now has the Hudson only.

Andy Hunter is the biggest dealer in Ann Arbor, so they say. His Ann Arbor garage is a fine building. He is an old-timer.

Lawrence E. Colgrove, who handles the Hudson in Grand Rapids, is one of the young lads. This is his second year. He used to be purchasing agent for a manufacturer and is a University of Michigan man. His father is P. T. Colgrove, of good roads fame. Lawrence is about to remodel his building to take care of the aggressive sales business he has developed.

Harry Scott is the motor authority in Kalamazoo. When any one wants to know anything about anything he asks Harry, who is the A. A. A. representative and race official. He is rated as an old-timer and sells the Packard and Hudson.

George Williams is manager of the American Motor Co., Battle Creek, a well-backed concern, handling the Hudson. One of the backers is Henry Beckman, engineer with a company that makes duplex printing presses.

Harry Cunningham, of the Cunningham Auto Co., handling the Maxwell, is one of Detroit's old-timers and well-liked dealers. He drove the Packard Gray Wolf, which broke records a couple of hundred years ago, and a series of physical misfortunes began when the Gray Wolf went through a fence and broke his leg. The doctors put in a silver bone, which worked well until pressure of a garter upset things and Cunningham went to a hospital. He was laid up for months, went south, came home, went on a shooting trip, went back to the hospital again, refused to let the doctors cut his leg off and now is all O K again.

Joseph M. Grasser operates the headquarters of the Grasser Motor Co. in Toledo and a branch in Detroit, but is at the show. He has sold the Hupmobile since 1910. His father founded one of Toledo's famed breweries and Joseph has an interest in the same business and before selling cars devoted most of his time to the Toledo Interlock Fibre Co., which makes Tifco bowling balls. He started selling cars in Toledo and in 1913 bought the Detroit Hupmobile branch.

George Edward Bleil is the manager of Grasser's Detroit business. Bleil's father was a carriage man in Detroit years ago and from that George drifted to the old Warren Motor Car Co. and from that went to the Grasser branch. Mrs. Bleil is of considerable assistance at the Hupmobile exhibit. The beribboning of the cars was entrusted to her with excellent results—which is a tip for other dealers, as Motor World has several times suggested.

J. A. McCormick, of the McCormick Auto Sales Co., Kalamazoo, has rambled. He used to travel for a stationery house and landed as an Abbott dealer in Columbus, O. Matrimony shifted him again. He married a Benton Harbor girl and managed to get the agency for the same car in his wife's home town. Two years ago he secured the Hupmobile agency in Kalamazoo and sells a lot of 'em.

B. Arnold Lockerby, Grand Rapids, is one of these live young men who start as salesmen and wind up as dealers. He used to sell Hudsons for Lawrence E. Cosgrove and was so successful that he secured the Hupmobile agency and set up for himself. He is a golfer and clubman. His people live in the West and own considerable ranch property. He has played in numerous golf championships.

C. A. "Dick" Reynolds, Alpena, Mich., sells the Hupmobile when he isn't wading through his new cranberry marshes, a venture which he recently took up. He has sold cars for four or five years and has what they say is the biggest establishment in Alpena. He is a University of Michigan man and hasn't passed 30 yet. His famous berry swamp contains 25,000 acres.

Sam Schaefer, St. Johns, Mich., rows, shoots, hunts, fishes, maintains a cottage on Houghton Lake, wears a markmanship medal and sells the Hupmobile. He used to be a cinderpath king when the bicycle was in the limelight, and when they turned the limelight from the wheel to the car Sam followed the lime.

Frank Enger, Adrian, was—and still is—a farmer, although he has had a Hupmobile salesroom with a salaried manager. Between times Frank leaves the raising of celery, apples and such things and goes to town to count the money he has made selling cars.

Harry Widrig, Mt. Clemons, is building a new garage this spring. He is only 25 or 26 and has sold cars for four or five years. He has the Maxwell and Hupmobile.

C. R. LeVeque, his brother, G. E. LeVeque, and H. L. Baston, are new in Detroit as the LeVeque-Baston Motor Sales Co., which is having success with the Metz. G. E. LeVeque, by himself, has the Pullman and Apperson and spends most of his time driving Pullmans from York, Pa., to Detroit. Since July 1 LeVeque-Baston has sold 60 Metzes in Michigan. C. R. used to be a real estate man, G. E. was a builder and Baston was at the Metz factory. He says Michigan should buy from 400 to 500 Metzes this year.

E. A. Sutfin, Owasso, Mich., is one of the new Metz dealers.

L. W. Vandersoil, who was a Maxwell chassis-chaser on last year's show circuit, is back again this year, this time as manager of the Maxwell show crews with a half dozen chassis. He also is a full-fledged lecturer, something Maxwell did not have last year.

"Vic" Lane, who lectured all over the country for Cadillac last year and the year before, has settled down. He is selling Cadillacs in Detroit and says a job with a home has it all over merely a job.

L. J. Robinson, of the L. J. Robinson Co., which sells the Chalmers in Detroit and is one of the best outfits in the country, has never done anything noteworthy except sell cars. And he is only 28—and looks it. When he was in school he was a newspaper correspondent and finally became sporting editor of the Battle Creek Inquirer. At one time he had 30 papers on his string. He did well in sports, making trips with the Tigers and becoming official scorer of a Michigan league. Then one day he went to the Buick factory on business and was mistaken for a wealthy young man from Denver, named Robinson, whose arrival was expected. The result was that Robinson, by mistake, was shooed into the big boss's office. When he explained things he stayed four hours instead of being shooed out and later started in in the shop and worked up. Then he and Walter Bemb got the Hudson agency and a lot of nerve and opened up as the Bemb-Robinson Co. It went so well that Robinson sold out to Bemb and set up for himself.

William and Charles McIntyre, Monroe, sold stoves and implements for years and recently sold out to concentrate on the Dodge and Chalmers.

"Pete" Raymond, Rochester, Mich., has been selling cars five years. His experience was gained in running a restaurant and selling real estate. He has always had the Buick.

Howard Fawcett, Pontiac, is at the show. He has sold the Buick for at least four years and has mingled with cars long enough to be classed as an old-timer.

William Meyers, of the Ann Arbor Taxicab Co., has his brother as a partner in their Buick agency. They ran the garage and cab business before they sold cars.

Clyde and Charles Bentley are the Bentley Bros., of Plymouth and Redford, Mich. They are old grocerymen and now handle the Buick. Clyde is a son-in-law of Al Bosworth, who has run a grocery business in Redford for 25 years.

William Nank and Charles Preihs sell the Buick in Mt. Clemons. Bill used to be mayor and is still a political power while Charles still runs the horse livery business he had long before he took on cars.

Charles Davis is the Davis Motor Sales Co. in Toledo and sells the Buick. He has money. He made $50,000 two years ago selling Fords, but now has only the Buick.

Sidney Schelable used to run a farm outside Ypsilanti but has just moved into a $50,000

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garage where he sells the Buick. He sold 45 last year.

Sterling Duson, Monroe, is, as his friends say, "a little Frenchman" who has sold cars seven or eight years. He has the Buick. He used to be a farmer.

George Brandis, Flat Rock, Mich., was an old implement man but took on cars seven years ago and now sells the Buick and Ford.

Edward and Charles Pfent are the Pfent Bros., of Halfway, Mich. They are old implement and hardware men and are said to have netted $15,000 last year with the Buick.

"Rosy" Rosenberger is at the show from Tiffin, Ohio, where he has sold the Buick for five years. Before that he had the Ford.

John Dicken, Fostoria, Ohio, has sold the Buick eight years and got his follow-up instincts from selling real estate.

Charles Atkinson, Howell, Mich., is what his friends call a self-made man. He ran a grist mill and sold implements until two years ago when he decided that the car offered a bigger future. Last year he sold 40 Buicks.

E. P. Telotte, with the Buick Detroit branch, hails from Fuqua, Texas, where he used to punch live stock. He was a real cowboy and sells Buicks with a Texas drawl. He was branch truck manager for five years and before that was on the road. He has been with Buick twelve years. Every two years in May he succumbs to the call of the old life and goes back to Texas and chases cows and coyotes for two weeks. He's due for another outbreak this summer.

Kurt Knowles, Milan, Mich., sells the Buick but hasn't entirely given up his farm and live stock. He still maintains high grade breeders and is well known in live stock circles.

Charles Clauson, Oak Harbor, Ohio, was a farmer before he began selling the Buick seven years ago. He is only 25 or 26. His mother owns big farms.

L. A. Judd, Lansing, is another old-timer, having entered the trade 10 or 12 years ago. He sells the Regal.

F. A. Bower, Athens, Mich., has sold cars seven or eight years. Aside from that, as his friends say, "he owns the town." He is interested in a bank, in real estate, runs a cafe and various other enterprizes. He had four farms the last time he took inventory.

M. D. Waddle, Kalamazoo, is selling cars his second year.

S. Mellen, Marlette, Mich., has operated a garage for years and has sold the Regal for seven or eight.

F. M. Sanford, Climax, Mich., is another who ran a garage for years before he started selling cars.

J. R. Moore, Stuart, Va., is a far-traveling show visitor. With J. B. Beach he operates the Patrick County Motor Co. and sells the Ford, Dodge and Overland and is scanning the show for another agency. He took electrical engineering in the Virginia Polytechnic Institute and then entered the motor car business. When winter business slackened Moore came to Detroit, Jan. 4, and will stay here until March 1, going through factories and absorbing all the information he can find. He has already been through the Dodge school and considers his winter in Detroit quite a post-graduate course.

Joseph F. Thompson, Ypsilanti, has sold cars two years. He sells the Dodge. He used to be a road salesman for an implement house, O. E. Thompson & Sons, to which he is related. He is erecting a new building with room for 25 cars.

Walter P. Staebler, Ann Arbor, of Staebler & Sons, is a University of Michigan man, and sells the Reo and Dodge.

Charles Ferrin, Mt. Clemons, got his selling experience retailing hardware. He sells the Cadillac, Dodge and Chalmers.

George Weiler, who runs the Weiler Auto Co. in Bay City, Mich., never did much except sell cars. He has the Buick.

Frank Church, who operates the Church Auto Co. in Port Huron, is a "young fellow," having sold cars only two years.

C. H. Lintz, Flint, has just moved his C. H. Lintz Co. into a new building.

Charles Buell, Jackson, used to be a Studebaker wagon man on the road. It is said that when he quit to sell the Dodge as a dealer Studebaker had to hire three men to fill his place.

L. F. Striker, Albion, is at the show, watching for prospects at the Dodge exhibit.

Chester Sweet, Benton Harbor, sells the Dodge now but used to sell hardware and insurance. He sold 150 Dodges last year.

Howard J. Cooper, Kalamazoo, used to be on a ranch in South Dakota, then he sold the Studebaker and Saxon but now concentrates on the Dodge.

Fred Fisk, Traverse City, Mich., is telling of the fine year he is having. He is in one of the greatest potato sections of the United States. Even the Indians about Traverse City are selling their potatoes at abnormally high prices and investing in cars. He ran a hotel until the town went dry three or four years ago.

W. F. Nern, who sells Federals and Commerce trucks for the Thompson Auto Co., Detroit, finds that his experience in selling credit information has left him in touch with a fine line of truck prospects. He is enthusiastic about the future of the truck on the farm and cites all kinds of data as a foundation for his enthusiasm.

Homer L. Yaryan, Toledo, used to be vice-president of the Blevins Auto Co., which is one of the good organizations in Ohio. Yaryan now sells the Oakland. At one time in his past he was connected with the United States Naval Stores in Georgia. His father is the inventor of the "central heating system."

Harry R. Radford and W. D. Block are the Radford-Block Co., which sells the Oakland and Marmon in Detroit. Radford used to be general manager of the Cartercar and Block was controller until that company went out of business. They then formed their agency and are having success.

James Strassberg is the front half of the Strassberg-Miller Co., which sells the Liberty. They are new in the Detroit agency fields. Strassberg used to be a manufacturer and later was general manager of the Detroit *Saturday Night*. Miller is a young man who formerly was with the Detroit Lubricator Co. They organized last April, had an opening in the Flamingo room at the Pontchartrain and formally opened their salesroom Aug. 1.

B. F. Falter, of the B. F. Falter Motor Sales Co., which sells the Briscoe and Marion-Handley in Detroit, has sold cars three years. He was for 20 years a salesman for a Chicago clothing house and later bought the Flanders motorcycle business — which didn't pan out very well. He is going to enlarge his place of business. Falter uses a MOTOR WORLD accounting system.

J. F. Lynch, who is at the show as eastern sales director for the Kissel, used to be the Kissel dealer in St. Paul, where he was in the car business for 10 years. Because of his beautiful crop of gray hair and his benign countenance, he has been dubbed "Father" by H. S. Daniels, the factory advertising manager. They are still good friends.

William G. Smith, of the Smith Motor Co., handling the Kissel, is about the newest thing in the agency line in the Detroit show, although he has handled the Stutz and Locomobile for a year and a half. George W. Franklin had the line until Thursday before the show opened, but when he, for various reasons, dropped the Kissel to concentrate on the Dort, Lynch, of the Kissel factory, placed the agency with Smith, found two show cars side-tracked at Richland on their way from the factory to Detroit, hurried them back to the factory, loaded them into express cars, and landed them at the show Saturday noon. H. S. Daniels, advertising manager at the factory, rushed to Detroit, got Kissel advertising in the Sunday newspapers, landed a picture and considerable publicity and Kissel affairs in Detroit went along as though nothing had ever happened.

Wilbur H. Collins, president of the Michigan Oldsmobile Co., Detroit, is the son of R. H. "Train Load" Collins of Buick fame. Wilbur was with the same company for years but secured the Olds agency in Michigan last August. He did so well he was given Ohio and has with it part of Kentucky, being probably the only Detroit dealer to have territory in Kentucky. C. C. Chaffin, Cleveland, is the general manager. Another member of the organization is Bert Spettler, who used to manage the Deere implement branch in Kansas City.

George W. Franklin, who handles the Dort in Detroit, used to be Regal sales manager and then was with the King-Dort Sales Co. Years ago he was in the foundry business.

Thomas H. Walker, "Old Tom," is sales manager for George W. Franklin. He dates back to the curved-dash Olds and the bicycle.

J. T. Belanger, of the Olympian Motor Sales Co., is a new dealer in the show. He has the Olympian and handles it at 1319 Woodward Avenue, where he continues the Woodward Tire & Rubber Co.

George Reason, of the Reason Auto Sales Co., is one of the Motor Capital's old-timers. He has been at it 12 years. He started years ago in hardware and implements and then became interested in the Cartercar. Twelve years ago he made the show circuit for the Cartercar, extolling the virtues of friction drive, and then became manager of the Detroit branch, where he remained until the friction proved too much for the car and it quit. Then he took on the Allen and Paterson and is still meeting his old clientele.

M. A. Young, handling the Reo, is another of the town's old-timers. Thomas J. Doyle, with the Dodge, is another. Doyle is said to be one of those men so constituted that they would rather sell two Reos than one Packard. They just have to handle something where they can sell fast and a lot of 'em. He is like Johnny Johnson, of Boston, who has littered the Hub with Buicks. Thomas and John are old friends.

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Do It This Way — QUERIES ANSWERED

Five Forms for a Repairshop System

Simple to Operate and Complete

Editor Motor World: We are trying to work out a system for our repairshop. We want a system that will enable us to keep a constant record of the work on hand yet to be done and a record of each workman's time so that we can tell just how he has been employed during the day, at the same time giving us a follow-up record for the office and for the shop foreman.

We will also appreciate your explaining in detail the mechanics of the system of operation.—Centralia Garage & Vulcanizing Co., Centralia, Ill.

Figs. 1 and 2 show two sides of the work card. The front is made out in triplicate. One of these cards is used every time a customer requires work done on his car, whether the work is free inspection service or regular repair work.

The name of the customer (John Smith), his home address and phone number, and his business address and phone number are placed on the card. All this information is necessary in order that he may be reached without loss of time.

The date and the number of the job are also placed on the card; the job number, as you probably know, is a simple means of identifying that particular card. All the jobs which come into your shop after installing this system will be numbered from 1 up consecutively.

The motor or car number, the license number, and the speedometer reading should also be placed on the card.

The license number affords a ready means of identification when the car is in the shop or at any other time, and it is particularly advantageous in a large shop. Furthermore, if the customer is a stranger and should take his car out without paying his bill it would enable you to trace it by writing to the Secretary of State. If the customer is a transient it enables you to obtain his address from the Secretary of State in case he only gives you his name—or possibly not even that if the job is a small one—and thus you can send him a letter from time to time so that whenever he is in your neighborhood he will be likely to come to your garage for any further work.

The motor number is a necessity as an absolute means of identification in case the car is sold and the license number is changed or in case the numbers are dam-

NAME John Smith Date Job No. 831
Home Address Cedar Ave Business address 50 High St
Phone 293M Phone Main 62
MOTOR NO. 46854 LICENSE NO A 3443 N.Y. SPEEDOMETER 27385

INSPECTION	DIRECTIONS
MOTOR	
Valve tightness	✓ Remove Carbon
Valve adjustment	✓ Grind Valves
Carburetor adjust.	✓ Take up rods
Fuel strainer	✓ Clean Crankcase and fill with new oil
Vacuum system	✓ Recharge battery
Spark plug points	✓ 4 new spark plugs
Breaker points	
Spark timing	
Carbon deposit	
Radiator connecns.	
Fan Belt	
Cutout operation	
Voltage regulation	
Tight connections	
Good insulation	
Starter operation	
Battery condition	
New oil in motor	
CLUTCH	
Cleaning	
Adjustment	
Lubrication	
GEARBOX	
Lubrication	
Adjustment	
DRIVING MECHANISM	
Universal lubricat.	
Adjust. Bevel gears	
Lubrication	
Brake adjustment	
Wheel bearing adjust.	
Wheel bearing lubricat.	
Wheel alignment	
Steering gear adjust.	
Steering gear lubricat.	
Headlight focus	
Tire condition	
Speedometer testing	
Spring lubrication	
All nuts and bolts tight	

When promised 12/30/16 Tested By H Brown
Work authorized John Smith Work accepted John Smith

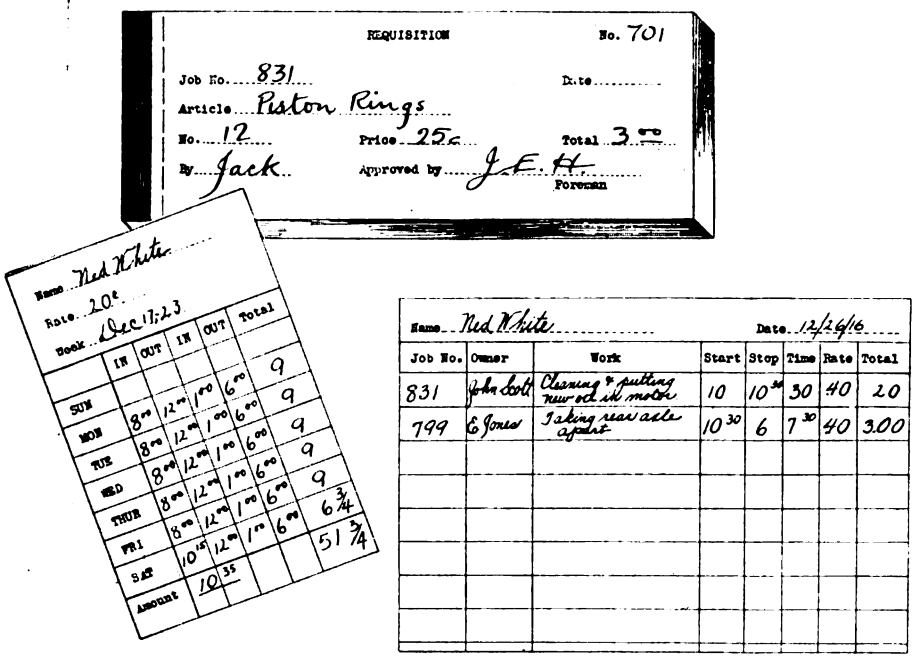
Fig. 1—The work card gives complete data regarding the customer and his car. The left column, headed Inspection, is to be used only in inspection work.

Name	Work	Date	Rate	Start	Fin	Time	Cost
Bill	Valve Grinding	12/26/16	60	9 30	2 30	4	2.40
"	Removing Carbon			2 30	4 30	2	1.20
Jack	Taking up rods	12/27/16	80	9	5	8	6.40
"	Putting in new rings			5	7	2	1.60
Ned	Putting new oil in motor	12/28/16	40	10	10 30	½	.20

No.	Article	Requisition	Date	By	Price	Total
12	Piston Rings	701	12/27/16	Jack	.25	3.00
1-	Gal kerosene	722	12/28/16	Ned	.12	12
2	Gal cyl Oil	723	✓	✓	60	120
	Recharging battery	725	✓	✓		1.00
4	Star spark plugs	735	✓	✓	1.00	4.00

Fig. 2—The reverse side of the work card carries a complete record of the labor and material used on the work

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REQUISITION No. 701

Job No. 831 Date

Article Piston Rings

No. 12 Price 25c Total 3 00

By Jack Approved by J.E.H. Foreman

Name Ned White

Rate 20¢

Book Dec 17,23

	IN	OUT	IN	OUT	Total
SUN					9
MON	8 00	12 00	1 00	6 00	9
TUE	8 00	12 00	1 00	6 00	9
WED	8 00	12 00	1 00	6 00	9
THUR	8 00	12 00	1 00	6 00	9
FRI	8 00	12 00	1 00	6 00	6¾
SAT	10 15	12 00	1 00	6 00	5 1¾
AMOUNT	10 35				

Name Ned White Date 12/26/16

Job No.	Owner	Work	Start	Stop	Time	Rate	Total
831	John Scott	Cleaning & putting new oil in motor	10	10 30	30	40	20
799	E Jones	Taking rear axle apart	10 30	6	7 30	40	3.00

Upper—Fig. 3—The requisition is the order used in obtaining new parts or supplies. Fig. 4—Right—How each man spends his time is recorded on a daily time slip. Fig. 5—The mechanic is paid according to the number of hours recorded on the time card

aged or prove defective. This has been the case thousands of time in New York State in the last. year. At the present time a license number in this State is a poor means of identification.

The speedometer mileage should be recorded so that any mistake by the owner regarding the mileage of the car may be verified. For example, suppose that you did some repair work and after 2 weeks the car had given trouble after running 200 miles. If the speedometer showed 1000 miles this would naturally put a different complexion on the matter.

Service Inspection Work

There is a column at the left of the card for service inspection work, and this should be checked. It is not necessary to copy this list, but this is merely a suggestion and you may add or subtract items as you see fit. This list should be helpful in not only performing any free inspection service which you may be called upon to do in connection with new cars, but also may be used for regular inspection work, which many owners now have done. We do not know whether you are doing any of this or not, but you will find that many owners will be glad to pay you, say, $5 for a monthly inspection of their car.

Very full directions regarding the work to be done on the car should be written in the spaces allotted for this, and at the bottom the date when the work is promised should be inserted.

The signature of the owner authorizing the work should be obtained in every case so that there can be no dispute as to what was ordered when the time comes to pay the bill. If after this work has come in it is found that there are several additional things to be done, the owner may be called on the telephone and the permission obtained; but, in addition, it is wise to have his consent in writing, and consequently these additional items should be placed on the work card and mailed to him for his signature.

After the job is completed it should be tested by someone, usually the foreman, and when the car is delivered the owner should signify that everything has been done to his satisfaction by signing at the bottom of the card.

When the job is started the original should be filed in the office, a duplicate should be given to the owner, and another carbon copy, which should be on cardboard, goes to the shop to be attached to the car. The signatures on the bottom of the card should appear on the office copy.

Fig. 2 shows the reverse side of the card, and this may be either the copy kept in the office as a matter of record or the copy which goes on the car in the shop; or it might be wise to have this information on both copies, according to circumstances.

All work done on the car is recorded on the card. For example: The first job listed was done by "Bill" on Dec. 26 and was grinding the valves. He worked from 9.30 to 2.30, which was 4 hr., and at 60 cents an hour the total was $2.40. "Jack" and "Ned" also did work on this car.

Record of Material

The lower half of the card records the material used, the first item listed being twelve piston rings, which were obtained from the stockroom by "Jack." They cost 25 cents apiece, which brings the total to $3.

If your shop is a small one the complete record of time and material may be kept on the back of the work card attached to the car. This work should be done by the foreman, superintendent, or, in a very small shop, by the owner himself. For example, when "Bill" starts grinding the valves the foreman would get this card, write down the date, "Bill's" rate (60 cents), the starting time (9.30) and, later, the finishing time (2.30), the total time (4 hr.), and the cost ($2.40).

Likewise, when "Jack" wants twelve new piston rings he goes to the stockroom and gets them, and records the fact on the card, as shown.

Inasmuch as this card is subject to frequent handling and is likely to become dirty, it is advisable to make these entries on the work card in the office instead. In a small shop this card might be kept on a desk in the shop.

In a larger shop the full record would be kept on the card in the office and would be done by a clerk.

The clerk would be informed as to the work done on the car and the material used by special slips. Thus, the record of "Jack's" purchase of twelve piston rings would be obtained as follows: "Jack" would get a requisition blank, Fig. 3, and fill it out, as shown. Then he would take it to the foreman for his approval, who would put his initials on it. Without this signature the stockboy or clerk would not give "Jack" the rings. Then "Jack" takes the slip to the clerk who has charge of the stockroom and obtains what he desires. At the end of the day this slip is forwarded to the office and the next morning the clerk who does the bookkeeping would transfer this information to the work card.

Requisitions Filed Serially

In case it is ever necessary to look up these requisitions, the work is facilitated by filing them according to their numbers. Consequently it is necessary to put the requisition number on the work card. Thus to find the requisition which was used in obtaining the piston rings, it is simply necessary to look at the work card, which shows that the number is 701.

The record of the labor is kept by time slips, one of which is made out by each man each day, Fig. 4. It has the name of the man, which in this case is Ned White, the job number 831, the owner's name, the work, starting, finishing and elapsed time and the rate and the total charge.

This gives a full record of what Ned White did all day long on Dec. 26. His first job was working on John Scott's car, which is identified by job number 831, and the work was cleaning the crankcase and putting new oil in the motor. He started at 10 and stopped

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at 10.30, the elapsed time was 30 min., and at 40 cents an hour the total is 20 cents. The rest of the day was spent in working on the car identified by job number 799 belonging to Jones, and was consumed in taking the rear axle apart. The elapsed time was 7½ hours and the cost $3.

The different employes are paid according to the record on the time card, Fig. 5, which gives the man's name, his rate and the week, which in this case is Dec. 17 to 23. He worked 9 hours every day except Saturday when he was 2 hours late; total 51¾ hours, and the amount is $10.35.

For keeping track of your stock, you should have inventory cards such as the one shown in Fig. 6. These may be purchased from A. Bobbe & Co., 320 West Superior Street, Chicago, and cost, 4 x 6, in 100 lots or more 85 cents, 1000 lots or more $8; 5 x 8, in 100 lots or more $1, 1000 lots or more $9.50.

The method of filling this card out is shown in Fig. 6. It is a ⅞-in. spark plug blank open end, porcelain type, and is sold by four different jobbing concerns. The prices as quoted by the different concerns are also given, as well as discounts, net cost and selling prices.

When a quantity of spark plugs is received, the date, the number of the concern from whom received and the quantity are recorded; this number, added to those already on hand, gives the total number on hand, and when they are sold the quantity is subtracted, the date put down and the number on hand is changed, as shown.

The other forms, illustrated, you will have to have made specially.

⅞" Spark plug

Blank open end ⅞" long porcelain type

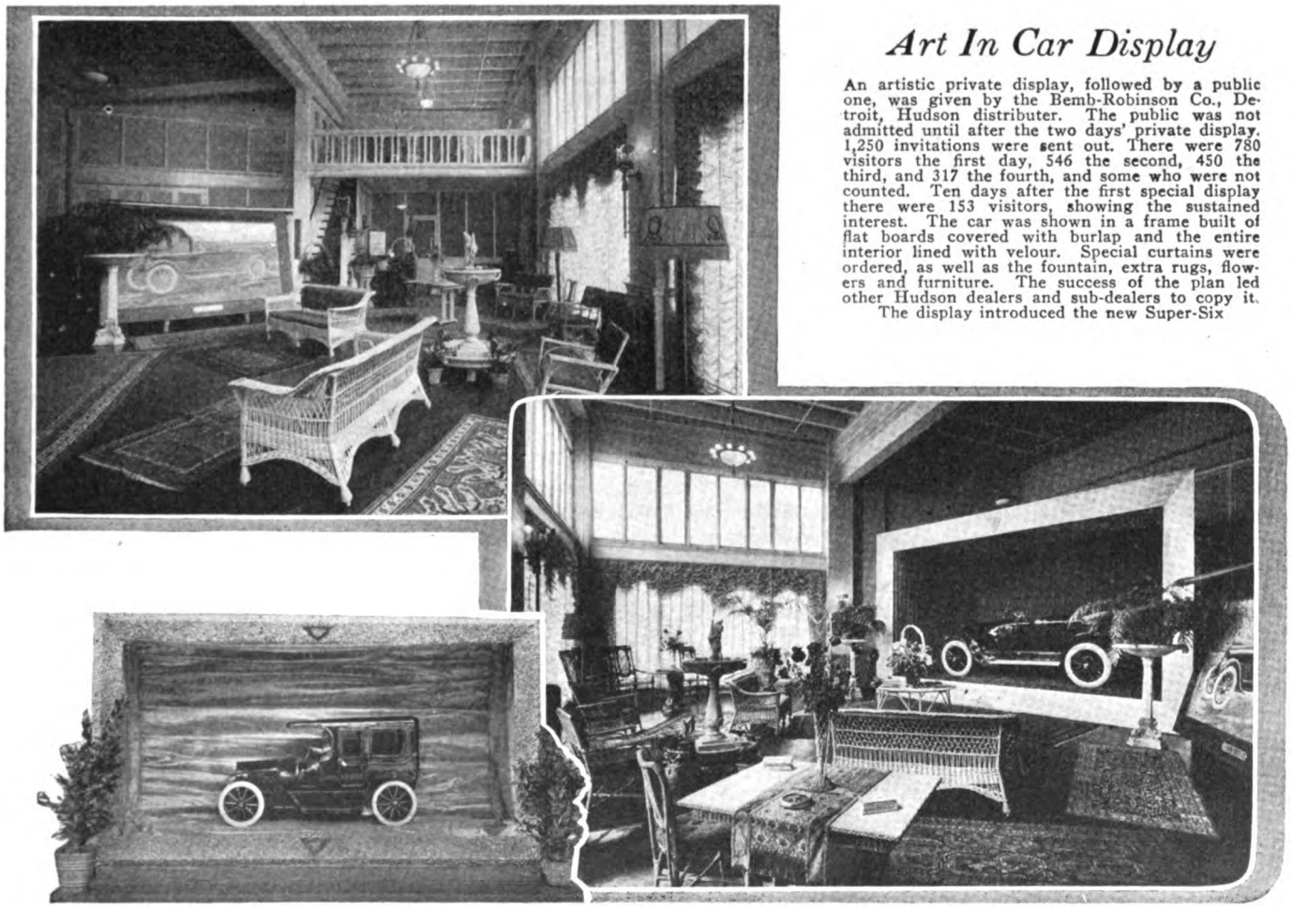
1 Auto Jobbing Co 3 N. S. Jobbing Co.
2 Mutual Jobbing Co 4 Albany Jobbing

QUOTED BY	1	2	3	4
LIST PRICE	100	100	100	100
DISCOUNT	40-5	45	40-10-5	35-10
NET COST	57	55	54	49.5
SELL. PRICE	100	100	100	100

RECEIVED			ON HAND	SOLD		RECEIVED			ON HAND	SOLD	
DATE	FROM	QUAN.	QUAN.	QUAN.	DATE	DATE	FROM	QUAN	QUAN.	QUAN.	DATE
11/9/16		24	40 24 64								
			58	11/16/16	6						
			46	11/20/16	12						
11/29/16	3	24	70								

Fig. 6—Inventory card which shows how much stock there is on hand at all times

If there are any details regarding this system that you do not fully understand, please ask us to explain, and if there are any features about the system which you do not think fully meet your needs, if you will tell us what they are we shall be glad to make the required changes to fit your business.



Art In Car Display

An artistic private display, followed by a public one, was given by the Bemb-Robinson Co., Detroit, Hudson distributer. The public was not admitted until after the two days' private display. 1,250 invitations were sent out. There were 780 visitors the first day, 546 the second, 450 the third, and 317 the fourth, and some who were not counted. Ten days after the first special display there were 153 visitors, showing the sustained interest. The car was shown in a frame built of flat boards covered with burlap and the entire interior lined with velour. Special curtains were ordered, as well as the fountain, extra rugs, flowers and furniture. The success of the plan led other Hudson dealers and sub-dealers to copy it. The display introduced the new Super-Six

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(No. 1031) CYLINDER REPAIR KINK

Reboring of cylinders may often be done away with if a strip of crimped spring steel be inserted beneath each ring. The spring used in this work is described as polished, tempered and blued strip spring steel. A piece is cut off to the straight strip just long enough to reach around the piston. It is then crimped in a vise by the aid of the crimping device illustrated. This device comprises seven pieces of ¾-in. fiber cylinders fastened to one block and fitting loosely into mating grooves in another block. The strip is placed between these two blocks and the vise clamped together. The crimped strip is then inserted beneath the piston rings and the piston inserted in the cylinder. This repair is not practical on any but concentric rings.—W. L. Toffard, The Winton Co., Philadelphia.

(No. 1032) SPRING STORAGE RACK

The side members of a discarded car frame may be built into a serviceable spring storage rack. The sections of the frame are bolted together in the form of an inverted T and are connected by cross pieces in the manner shown. Side strips riveted to the uprights at regular intervals offer a convenient rest for the springs to be stored. Not only may a large number of springs of different sizes and styles be stored in a small space, but any spring is instantly accessible. Though in the construction shown rivets and bolts are used, oxy-acetylene welding, if available, would be more simple.—W. L. Toffard, The Winton Co., Philadelphia.

(No. 1033) FLANGE PULLER

A novel form of flange puller is illustrated. It is round bar stock, somewhat larger than the flange to be removed, turned to a taper on the outside, with the inner part bored out and under cut, as shown. The body of the bar is split to permit the jaws to be contracted on the flange to be removed by a contracting ring. The removing force is applied by a central pressure screw. The advantage of this type of puller is that it applies the removing force evenly to the flange and hence cannot spring it out of shape. It is, however, obvious that the puller can only be used on one size flange.—G. S. Kaylor, Reo Service Station, New York.

WHEN YOU WRITE!

Don't forget the Short-Cuts department next time you write MOTOR WORLD. *Whatever the occasion is, whether you write for legal advice, for information on winter business methods, or to renew your subscription, don't forget to make a rough sketch and write a short description of your best Short Cut.*

(No. 1034) TOOL ROOM STEPLADDER

This is a combination stepladder and stool for the tool room boy. It is made of wood throughout, having a step and seat in the manner shown, and obviates the necessity of having a separate ladder for reaching stock on the shelves.—W. L. Toffard, The Winton Co., Philadelphia.

(No. 1035) CONNECTING-ROD TESTING

A device for testing alignment of the wrist pin and crankshaft bearings of the connecting-rod. The testing device proper is a micrometer screw fastened to the upper end of a piece of drill rod that is mounted on a piece of 1 1/16-in. piece of angle iron. To use cold rolled steel mandrils are placed in the bearings of the connecting-rod and the micrometer head set until it just touches between the two on one side. The other side is then checked up and any difference in the two readings of the micrometer corrected by bending the connecting-rod. Twist in the connecting-rod may be determined by the aid of a face plate.—W. L. Toffard, The Winton Co., Philadelphia.

(No. 1036) SPARK PLUG TESTER

A method of testing spark plugs is illustrated. The device used comprises an old spark coil mounted on a box containing several dry cells, and connected to two metal rests in the manner shown. To test the plug is placed on the two rests, the circuit made by pressure on the push button and the resulting action of the plug noted.—G. S. Kaylor, Reo Service Station, New York.

(No. 1037) TESTING CONNECTING-RODS

A jig or fixture for testing the alignment of connecting-rod assemblies is shown. The crank bearing of the connecting-rod is attached to an arbor that is part of the base, and the piston swung across the face of the disk that is fastened to an upright. This disk is made similar to a face plate and is necessarily at right angles to the crank bearing arbor. Any misalignment is instantly detected and corrected by bending the connecting-rod so that the side of the piston forms a line contact with the surface of the disk. This prevents the possibility of unequal wear of cylinders due to off-center pistons.—Continental Motors Co., Detroit.

(No. 1038) FLANGING COPPER TUBING

Copper tubing may be readily flared for the attachment of unions by the use of a pair of lineman's splicing pliers. The end of the tube to be flanged is caught in the jaw of the pliers and a punch used to press the end out the required amount. Ordinarily, some one of the grooves in the pliers will be found to fit almost any of the copper tubing commonly used. When this is not the case the grooves may be readily enlarged by an emery wheel.—W. L. Toffard, The Winton Co., Philadelphia.

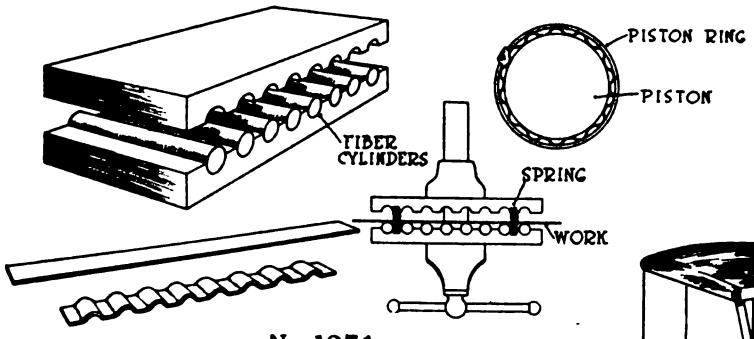
(No. 1039) ADJUSTABLE JACK

In addition to the feature of adjustability, this jack is strong, stable and easy to construct. It is wood throughout, bolted together in the manner illustrated. Steel strips protect the sides and top of the plunger from injury, and a steel plate on the top table prevents the locking pin from cutting into the wood. The jack is used in conjunction with a quick acting jack, or with the common lifting jack. Another advantage gained by the use of an auxiliary jack is that it leaves the lifting jack free for other purposes.—Gomery-Schwartz Motor Car Co., Philadelphia.

(No. 1040) CRANKSHAFT TESTING

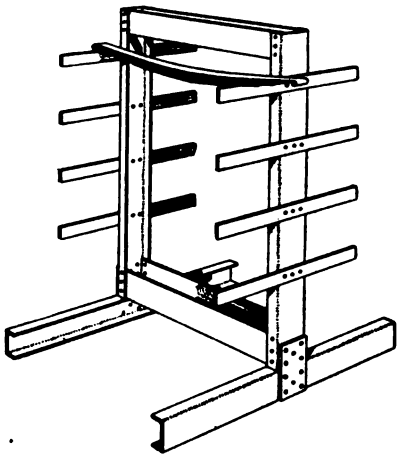
The crankcase may be used as a fixture for testing the alignment of the main bearings of the crankshaft with little difficulty. The case is placed on the bench in the position shown, a strip of pasteboard about 1 in. wide and 1/64 in. thick placed beneath the front and rear bearings of the crankshaft. By these the shaft is raised from the center bearing and side play prevented. A pointer is then clamped onto the side of the case at the center bearing, and by turning the shaft the amount it is out of true is determined. This method is not only better but quicker than testing in a lathe.—Edwin Purkess, 171 Independence Avenue, Quincy, Mass.

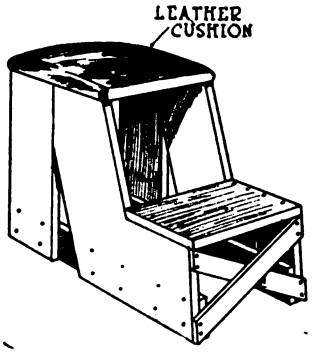
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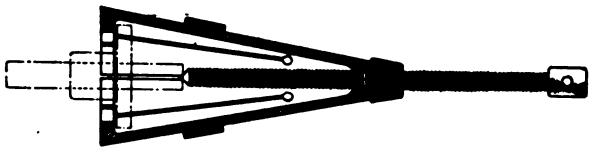
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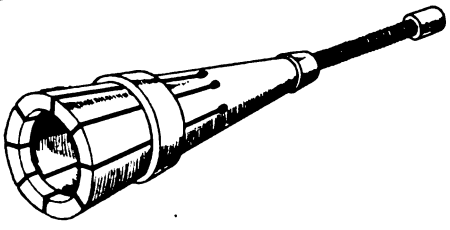


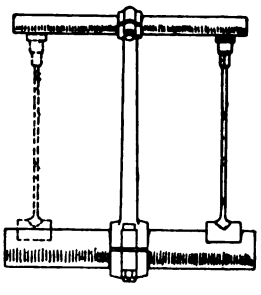


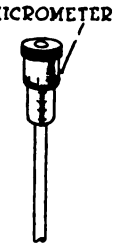
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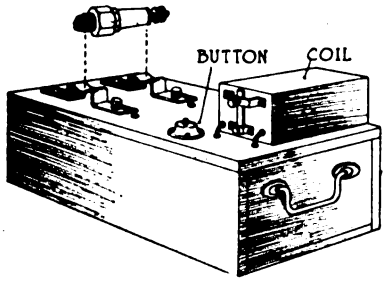




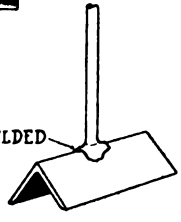
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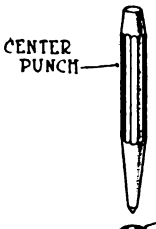


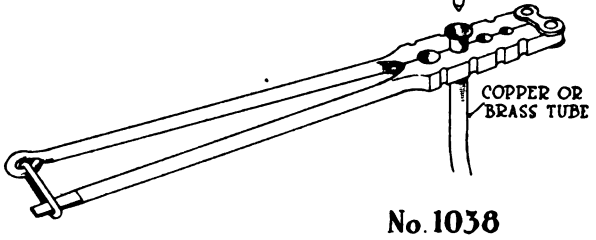
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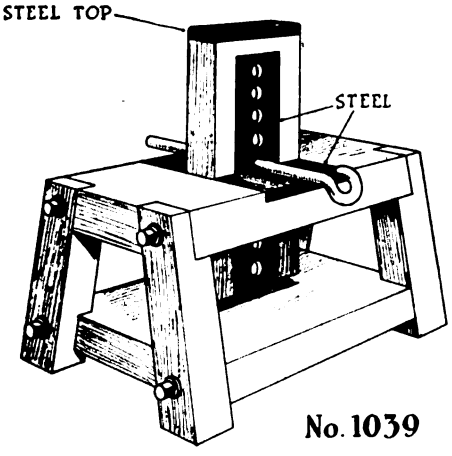
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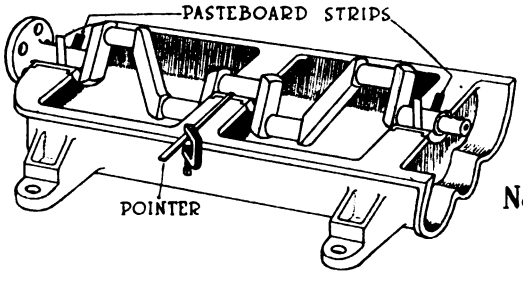




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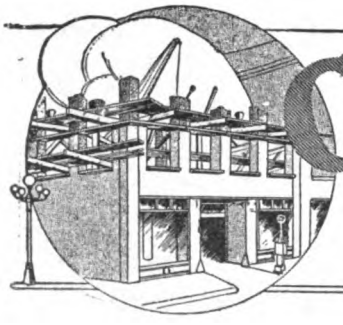


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Scientific Construction
GARAGES REPAIRSHOPS SHOWROOMS

By Harold F. Blanchard

TWO-STORY BUILDING WITH RAMP

Editor Motor World: Enclosed please find a rough sketch of our garage now under construction. We have endeavored to show you about how we are planning to arrange same and use the floor space. Would appreciate your suggestions as to the best and the most economical use we can make of it.—Havre Commercial Co., Havre, Mont.

Fig. 2 shows a plan which we believe you will find satisfactory.

There are several small faults in the plan you have submitted. The depth of the repairshop may well be reduced to 30 ft. Making it 37 ft. deep is not necessary.

It is inadvisable to place the ramp at the center inasmuch as it would seriously interfere with the aisle space in the basement.

Also, it is poor practice to put the driveway to the main floor in the center, because it separates the showroom from the accessory department. This is objectionable inasmuch as it entails extra walking in going from one department to the other.

The idea of having a door with a window and a counter at the rear of the accessory stockroom is excellent.

The extreme width of your garage makes it possible to place two rows of cars on one side of the aisle instead of only one, provided the cars are very short ones, such as Fords. We have not indicated this on the plan, however, as we were not sure that you would care to do this.

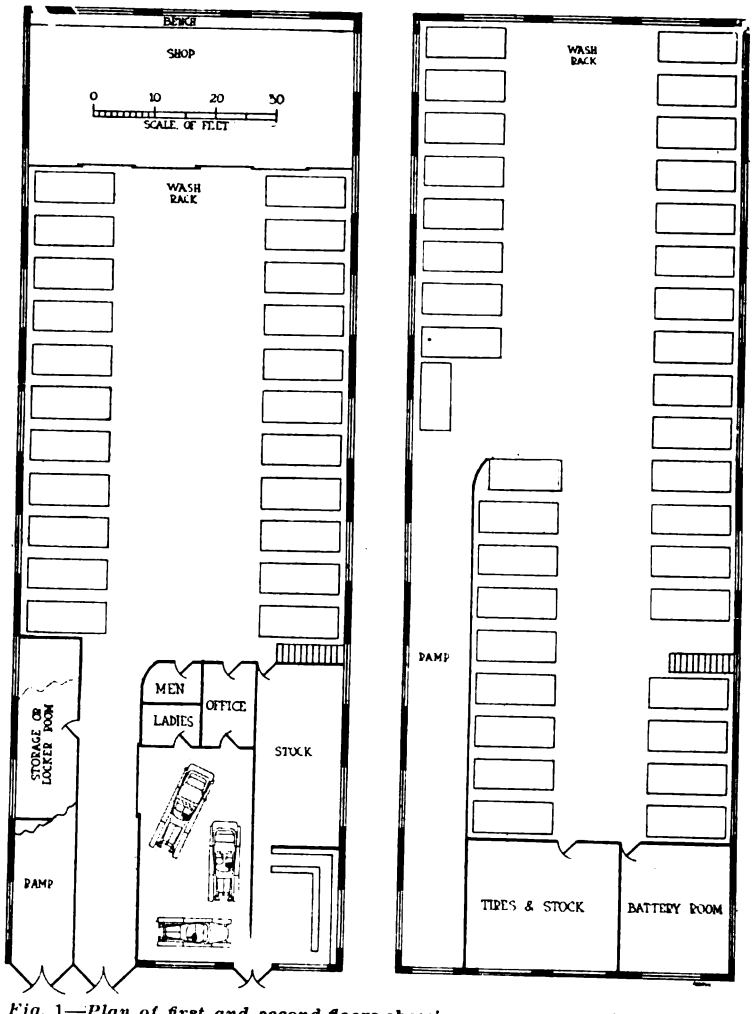


Fig. 1—Plan of first and second floors showing arrangement of the various departments, including storage battery and vulcanizing rooms upstairs

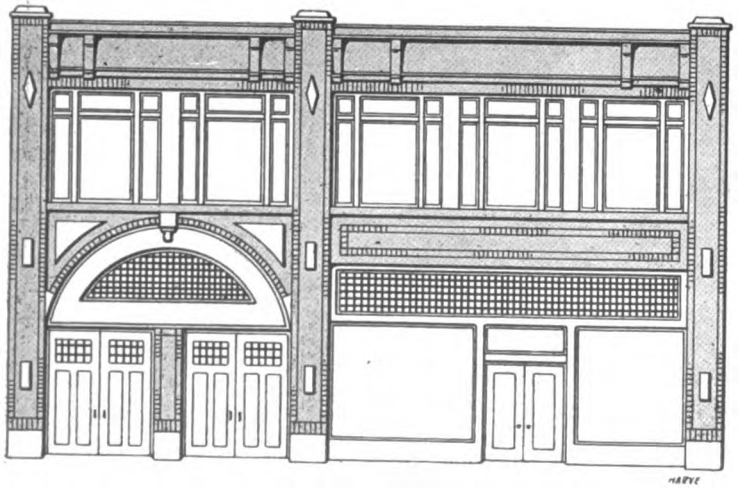


Fig. 2 — Suggested front elevation with the ramp entrance at the extreme left

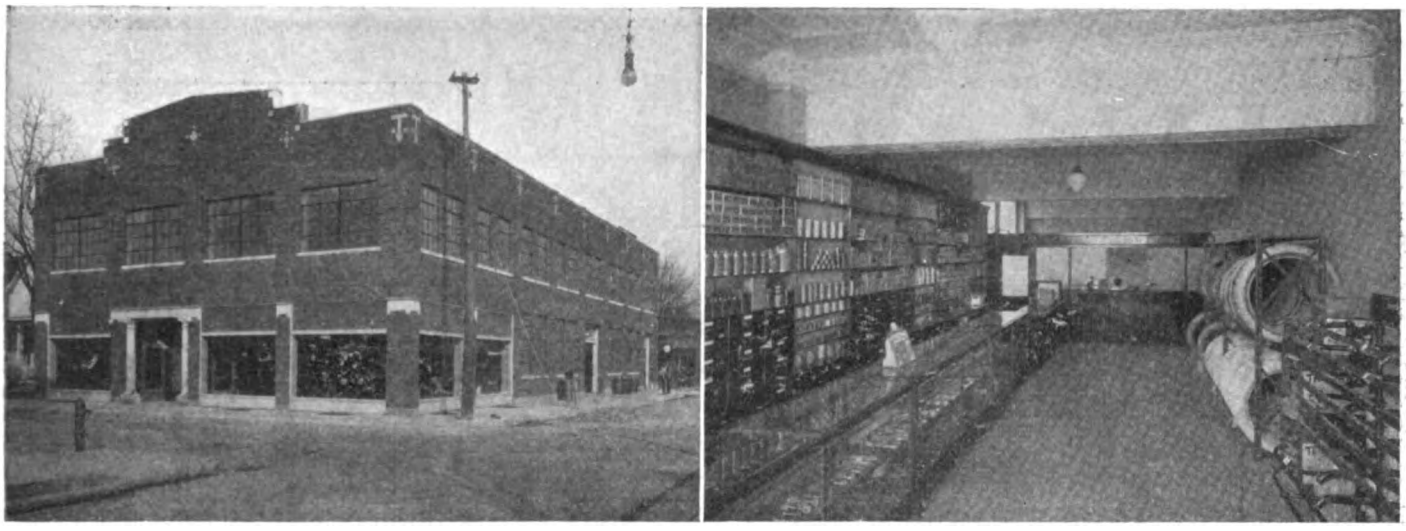
Builds According to Motor World Ideas

Editor Motor World: I am sending you under separate cover five photographs of our new building, together with a newspaper clipping giving a short account of the history of our concern. I thought you might be interested in this for two reasons, first, because we think our building represents the best in garage construction, and we want you to know we watched Motor World every week for months before we started to build, getting ideas from that section of your publication which has to do with automobile buildings.

In that connection we might add that we have been constant readers of your valued paper since you first started to print it. We have tried to conduct and build up our business along the lines as laid down by Motor World, and how well we have succeeded you may judge by the accompanying photographs. We own this building ourselves, and across the street is our old establishment, which we rent, and which we use for our used car department, repairshop and battery department. Our business has grown in seven years from $25,000 to $300,000 annually. We attribute our success to three things—we are always on the job, we keep clean and we get the price. That's the answer.

I just wanted to take this opportunity to tell you how much we think of Motor World, and we attribute no small part of our success to this little partner who comes once a week to keep us brushed up and to help us straighten out our troubles.—Frank A. Hanley, Secretary, Hanley Automobile Co., Muncie, Ind.

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Left—Exterior of Hanley Automobile Co.'s new building with attractive showroom and accessory store. Right—The accessory store is a model of neatness—because the Hanley company finds that it pays

THE inclosed pictures are different views of the new home of the Hanley Automobile Company, at Madison and Jackson Streets, Muncie, Ind. The building was erected at a cost of $20,000, and is strictly fireproof, being constructed of steel, brick, cement and stone.

The window sash is steel, being fitted with factory ribbed glass. This building is unique in the fact that there is not a post in it, the second floor being supported by huge I beams, and the roof carried by built-up trusses. The dimensions are 57 x 125 ft. The beams were rolled by the Bethlehem Steel Company, and are 30 in. high by 57 ft. long, and weigh 3½ tons each. The steel work came high, particularly at this time, but the advantage gained by not having any posts is incalculable; it is the only way to build a garage, if at all possible, and it is well worth the extra expense.

A 3-ton Otis elevator, 9 x 20 ft. is situated at the northeast corner of the building, or, in other words, it is at the outside, against the sidewalk. This is a big advantage, as a car may be driven on the elevator from the street without ever entering the building; we have a special door for the elevator. Another thing, it does away with a turntable, as you never have to back a car off the elevator; you head on from the street, and on arriving at the second floor, you head the car off. The same thing coming down; you head the car on the elevator, and when it drops you to the floor, you head right off on the street, without ever coming in the garage, and trying to find your way out the main door.

The entire front of the building for 52 ft. back is devoted to salesroom, accessory room, main office, and ladies' rest room, which is kept spotlessly clean, and is much appreciated by tourists; it is finished entirely in white.

Under the front of the building is located a large cellar, 52 x 57 ft., and here we have the steam-heating plant, and our stock room for rubber goods and supplies of all kinds. There is no repairing of any kind done in this building, with the exception of minor adjustments, as we still retain our old establishment, which is directly across the street, and which is one story, 62 x 125 ft. In here we do all repairing, keep our used cars, and maintain our Willard battery department, vulcanizing department, etc. The two buildings are connected by private telephone, and the foreman's office is in the old building.

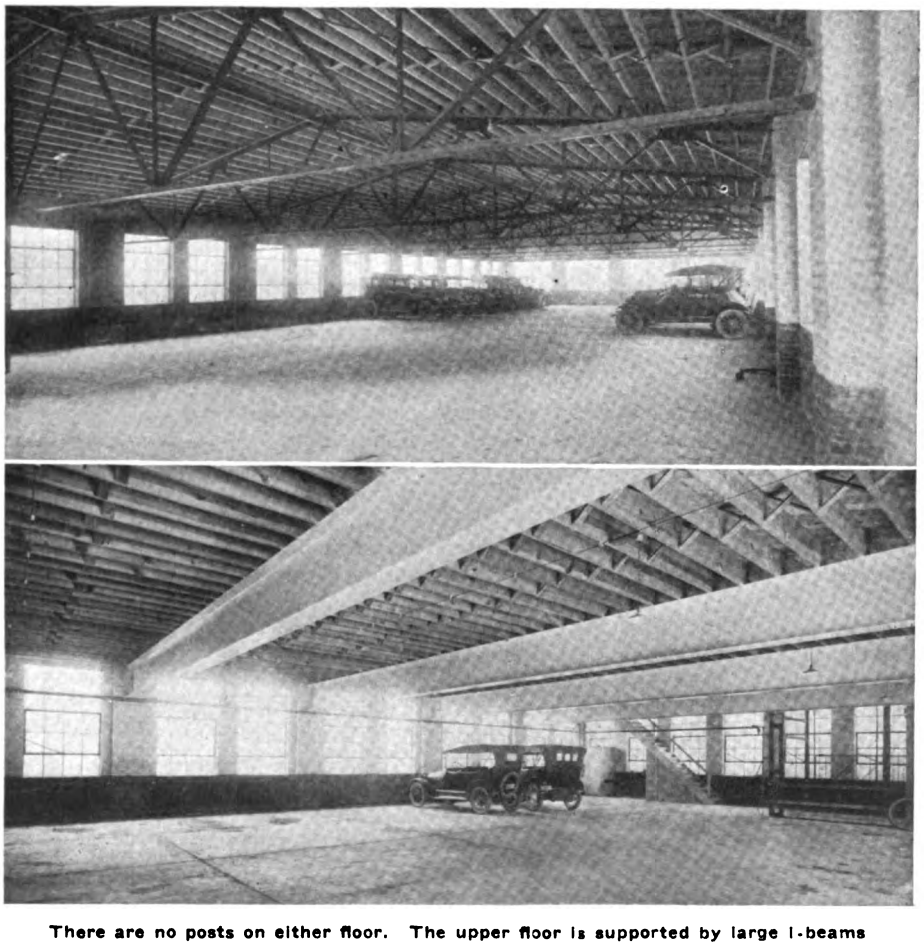
At the new building we maintain oil, gas and air filling stations along the curb on the outside. The interior of the building is used entirely for sales purposes and storage; we keep open all night. Our salesroom is finished entirely in white, with gray metal ceiling and hardwood floor.

The present Hanley Automobile Company had its inception in the summer of 1910, when Frank A. Hanley and J. J. McInnis started a general garage business in what is now our old building; at that time it was only about one-third its present size.

The Hanley Automobile Co. distributes the Hudson and Interstate cars in eastern Indiana, and sells accessories and tires at wholesale and retail.

We are strong believers in ADVERTISING, ATTRACTIVE SHOW ROOMS AND WINDOW DISPLAYS. JUST WHAT MOTOR WORLD HAS BEEN TRYING TO POUND INTO THE HEADS OF DEALERS ABOUT CONDUCTING THEIR BUSINESSES, IS EXACTLY WHAT WE BELIEVE IN.

—Hanley Automobile Co., Muncie, Ind.



There are no posts on either floor. The upper floor is supported by large I-beams

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Winter Business

Action Is What Really Counts

Win Out! Make Money!

THE secret of money making so far as you are concerned is YOU.
The secret of J. P. Morgan's success was HIMSELF.
The reason for the rise of the office boy to the top is THE OFFICE BOY.

You can't pass the buck to chance, the weather, local conditions, location or your ancestors. In business and in life the goat is YOU, and you might as well decide now to keep the buck in your own hand and push yourself along. You'll get gray waiting for your fairy godmother. There are no godmothers or fairies in the motor car business.

And now—are you selling any Winter Accessories?

Wait a minute! Wait a minute! Don't begin to pass that buck to the weather. The weather has nothing to do with it. It's YOU.

Get some letters advertising your accessories. Run some ads. Distribute some literature. Make some calls. Phone some car owners. Demonstrate your winter goods. Display them in your window. Display them in your store. Get busy and push these goods and they'll sell.

Sell Tires Now for Spring Touring

Use This Tire Letter

Dear Mr. Prospect:

No tire will last forever.

Your tires did considerable service last season and some of them probably are hardly capable of carrying you far the coming season.

If you have a blow-out when you don't expect it or are a long way from home it will inconvenience you greatly.

One thing we believe you ought to do is make sure your tires are RIGHT before you hurry the car out of the garage in a few weeks and make a dash for the country.

Let us look over your tires. If they can be put into A-1 condition we shall advise you as to what seems to be necessary.

But—in your equipment there certainly should be one or more good tires. We suggest that you look into this matter and get one or more good tires on hand before you need them, then you'll have nothing to worry about when the time of need comes. And, with tires, the time of need is a pressing need indeed, isn't it?

Our tire expert will inspect your tires here or in your garage, and, if you so desire, will relieve you of all trouble of taking off and replacing. We aim to give service that pleases.

Yours truly,

BURT'S GARAGE.

Keep Your Shop on a Profit Basis

Send Out This Letter

Dear Mr. Prospect:

Have you seen a robin yet?

It's early, of course, but the first thing you know Mr. Robin will be here and right on his heels will be fine touring weather.

When that robin gets here you'll want your car to be in tip-top shape, and we want you to have it in tip-top shape.

We believe you will look back with satisfaction if you take up NOW the matter of having your car made ready for spring. Have it rejuvenated. If it's slightly worn a little fixing over will make it look like new, and there is nothing so satisfying in the spring as a car that looks fit.

A little later we shall be rushed with work. Many motorists will want their cars rejuvenated AT ONCE and we simply won't be able to do all this work in the time our patrons want it done.

But we can give your car excellent attention NOW. Our shop has been put in A-1 condition during the past month and WE'RE READY. We want to cut down the spring rush as much as possible, which means a lower cost per job and greater satisfaction.

Phone James 1923 and be ready when spring comes.

Yours truly,

BURT'S GARAGE.

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Are You Selling Cars Now? Or Waiting?

IN a snow-bound New England city is a dealer who is selling as many cars this winter as he sold last summer. How are YOUR sales holding up?

Cars CAN be sold NOW, despite the weather. The big essential is EFFORT on the part of the dealer. The dealer who TRIES does things. The dealer who does things MAKES MONEY summer and winter.

YOU can sell cars right now, IF YOU PLAN A SALES CAMPAIGN AND PLUG HARD. Of course, it may require more work than it would in the summer, but if work will make you money why not work? If you aren't selling cars now:

Do These Things

1—Get a prospect list, if you haven't one, listing all those you think may buy cars. Get this list together in a card file and keep it in a systematic, business-like way.

2—Send letters to this list, urging that cars be ordered now for there is quite likely to be a shortage as soon as spring arrives. Be sure you get deposits with all orders and try to deliver and collect NOW.

3—Select a small list of the most likely purchasers and go after them hard. Make personal calls and do everything in your power to SELL THESE MEN NOW.

4—If you sell on the time payment plan advertise it. Below is shown an ad used with success some months ago by a southern dealer.

5—Pick a list of farmer prospects and drive out to see them on bad days. Make the car perform. Show them by the fact that you called on them in rough weather that the car can stand the rough weather. If you have a detachable or all-weather body put it on and arrive at the farmer's house in comfort, minus heavy overcoat or overshoes.

6—Urge your owners to drive. Send out letters and advertise in the papers that winter touring is a healthy pastime. Offer a prize for the party which makes the longest run out of town during a certain week or on a certain Saturday or Sunday.

7—If you have, say, six owners with winter cars offer them a gallon or so of gas free every day if they will use the cars in the business district and let them stand where they will be seen provided they aren't already doing this. Make sure the radiators are filled with anti-freeze.

8—Put one of your salesmen on telephone work. Extract from the prospect list those names which you believe should be specially handled at once and let this salesman go after the rest by telephone and see how many demonstrations he can date up.

9—Form a winter motoring club and arrange dinners at a nice road house, each motorist to pay his own bills, of course.

10—Every morning check over the cars you have and will have and the sales you have made and see how you're coming. To break even you must sell a certain number of cars NOW.



Studebaker

Six Cylinder 7 Passenger
50 H. P. PRICE $1085

Four Cylinder 7 Passenger
40 H. P. PRICE $875.

EXAMPLE OF OUR TIME PAYMENT PLAN
Four Cylinder Car.

Price of Car f. o. b. Factory	$875.00
Insurance, etc	25.50
Total from Customer	$900.50
Cash from Customer, 1st payment	$317.50
Note from Customer due 1st month	72.88
Note from Customer due 2nd month	72.88
Note from Customer due 3rd month	72.88
Note from Customer due 4th month	72.88
Note from Customer due 5th month	72.88
Note from Customer due 6th month	72.88
Note from Customer due 7th month	72.88
Note from Customer due 8th month	72.88
	$900.50

THESE EIGHT NOTES BEAR INTEREST OF 6%

O. K. Auto Supply & Transit Co.
61 63 Biltmore Ave. Asheville, N. C.

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Accounting and Business System

Accounting Loans

Editor Motor World: I have been asked by an automobile dealer who is a subscriber to Motor World to install your Simplified System of Accounting, and therefore would be glad to have you explain the following questions:

After reading your book on this system, I take it that if this party were to borrow a certain sum of money at his bank this would be shown in accounts "Notes Payable." If this is the case, the bank whom this party deals with would not be given an account. Also the same question on customer's debits shown in accounts "Notes Receivable."

Does each customer have one whole page for his account, or is each name listed down the side of the page? If the latter be the case, how do you rule off accounts paid up, and how could you refer to a certain customer's account and tell what his balance is at a glance without having to check off the amounts paid on one side of the page and the difference on the debit side leaving his balance?

On page 28 of your booklet I notice that your figures read: Dividing $189.25 by $984.34 leaves 20 per cent. I would be pleased to have you explain this to me, as I could not get this answer by taking these figures.—E. G. ANDERSON, Chicago.

We are sending you the three forms that are used in the system, as we believe from your letter that you have not seen or else do not know that a third form is used upon which is entered all charges and credits to customers' accounts and the charges and credits are transferred from the debit side of form 1 and the credit side of form 1 under customer's account.

If you have the system pamphlet this is illustrated on page 35, both for accounts receivable and accounts payable.

Separate Sheet for Each

If there are enough accounts with your dealer under notes payable you can, of course, give each bank or party from whom the dealer has borrowed money a separate sheet, but I hardly think this will be necessary.

After you have received the three forms that are in use it will answer your third paragraph in re customers accounts.

In answer to your last paragraph, you are absolutely right to call our attention to the figures on page 28. We state here that $189.25 is 20 per cent of $984.34. The correct percentage is 19.2, but in order not to confuse our readers with fractions or a multiplicity of figures we use round numbers in order to make up the little table that you see at the bottom of page 28 of the System Booklet.

C. O. D. Charges

Editor Motor World: Sometimes we receive tires and other parts by express C. O. D. on which there is a return money charge of say 25 cents, and then there is the express charge also.

If the item happens to be tires do you debit the stock account, as this is an expense on this department? Where do you debit return charge and express charge?

Sometimes we return goods to jobbers and receive credit on our account and sometimes a cash refund. How do you enter these?

At times customers come in and use our telephone for long-distance calls which we charge to their account, and strangers always pay cash. We always charge same as though it were service or supplies on our cash and credit slips. How would you enter these?

Should we charge a telephone call to a customer when ordering parts for his car in all other accounts on Form 1. Where do we debit and credit it on Form 2?

Using Sales Books

In our business we use sales books in triplicate form, in charge accounts only. We file original in a total account system, on which all previous charges are carried forward, keeping his account up to date.

The second sheet is taken out for the purpose of transferring to the Motor World System, and the third sheets are sent to the customer at the close of the month instead of an itemized statement.

All cash business is written in a book similar to a day book, and is checked up at night with the detail roll on our cash register.

Our register is a National 356-G. It has a received on account key, paid out key and charge key. We do not use charge key at all, as it only prints on detail roll. Do you think this is a good way to work it out? It is very simple and efficient.

P. S.—I wish to say that I think a great deal of Motor World and the System, and I would not be without either. I think there are a great many garagemen who have never seen Motor World, as was the case with me when I received a copy instead of another magazine that I had subscribed for and the Class Journal bought up and discontinued. If these garagemen would receive a copy they surely would not pass up the best motor trade paper in existence.—CHAS. P. EASTMAN, St. Charles, Ill.

In operating the system bear in mind that form 1 records all charges to customers covering sales, etc., and all cash received for sales or otherwise. We will use your example and say, for instance, you receive a shipment of tires and parts by express C. O. D. This necessitates your check being drawn for the cost of the tires and the express and the refund money order.

Remembering again that on form 1 is recorded all cash received, this entry would, of course, go on form 2, which records all of your cash paid out. The tires are to be placed in your stock for sale and the cost of the tires would be charged on the debit side under stock account to tire stock we will say, for example, that the entire charge, including the express and so forth, amounts to $103.25—$100 would be charged under stock account and under the accessory department would be charged the $3.25 to an expense which you would call express.

Returned Goods

Now take your example of returned goods to jobbers and we will say, for example, that one of these tires that you have just received is found to be faulty and you decide to return it for credit. When the tire is shipped you would charge it to the jobber in the same manner that you would charge a sale to a customer with the exception that instead of charging it on the debit side under customer's account you charge it under all other accounts and say accounts payable .....Jobber Co.

In other words, you have charged this to your jobber to whom you already owe money and which would show on your books as a credit to that jobber. This charge to that jobber will offset part of the credit that you have to him if he is going to credit your account with the return of the tire.

If you are to get a cash refund for the returned tire this charge will be charged up to the jobber until the cash refund comes in. When this comes in you would enter the cash received in the cash received column and under all other accounts on the credit side you would credit accounts payable..... Jobber Co., this credit offsetting the charge that you made when you shipped the tire.

When the tire was shipped and you charged it on the debit side to all other accounts your credit on the other side would be to all other accounts to your stock account. Tire stock. Remember, too, that this charge would be at cost, and in charging it if you want to charge the express cost back to the jobber include the amount of the express in your charge, but in your credit on the other side credit the stock account with the exact cost of the tire and then credit

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your expense account express with the balance of the charge.

This credit to the stock account will offset part of the original charge you made when these tires were placed in stock for sale. The credit to expense will offset some of the cost of express if you charge on form 2 when you paid this out to the express company.

If the customer pays cash for his telephone charges or if the stranger pays cash you would enter this in your all cash received column and on the other side under all other accounts you would credit this to an expense account called telephone. This credit to telephone expense will offset some of the expense that you will incur during the month, and which you will find under the general expense on form 2 when you pay your bill for the telephone. If the customer says charge this on my bill simply include it in the sales ticket that you make out and enter it on the debit side under customers' charges and credit it the same way as if he had paid cash.

The above will answer your question as to whether these entries should be made on form 1 and 2, and you can readily see that all such entries would be made on form 1, the only entry being made on form 2 is when you pay your telephone bill, which would be charged up to general expense to the telephone expense account, against which you will have a credit on form 1 to telephone expense being the payment by customers and strangers for telephone calls made in your place.

Charges on Sales Slip

Your system of entering charges on a sales slip which shows at all times the balance due is a very good one.

We also assume that at the end of each month you add up the total amount due you on your sales slip and make this agree with the figures as shown by the Motor World system. In other words, if your customers owe you at the beginning of the month $500, and the figure under charge amount to customer shows that you have charged your customer $200 during the month, that the total amount owed and charged would amount to $700. Then subtract from this the figure shown on the credit side of the customer's account and this will give you the exact amount which is due you from the customer.

Proportioning Expenses

Editor Motor World: If it is in line with the policy of your paper, we would like to get the following information:

1. What percentage of total yearly sales should the total overhead expense be?
2. What percentage of the total yearly sales should advertising expense be?
3. What percentage of the total yearly sales should the office salaries be?
4. What percentage of the total yearly sales should the selling expense be?
5. What percentage of the total yearly sales should the inventoried cost of our stock be?—Automobile Supply Co., Wilmington, Del.

It is rather difficult to answer your questions by saying that anything "should be" so much.

1. As to total overhead it may be as low as you can get it, and the only thing we can tell you is that it varies greatly and runs from almost nothing up to almost 50 per cent. Probably the average figure for a business of good volume would be 20 per cent, although we know some very reputable companies which maintain that their overhead is 33 per cent.

2. What advertising expense should be varies according to conditions, and we hesitate to recommend any certain percentage. If you are in a growing business period it would be higher than if you had an established business and were not trying to increase it. This is a question that has come up many times and we have had it up with a great many expert advertisers, without being able to arrive at any certain definite figure.

3. The percentage of office salaries should not be fixed by an arbitrary percentage basis. One failing in the automobile trade is that many dealers do not have offices and therefore have no office salaries. There should be, however, some office force even if it is only a manager and one stenographer. Above that you should have all that is necessary and absolutely no more.

4. Selling expense varies. What it may be is indicated by the fact that salesmen on straight commission receive generally 5 per cent, and we know of one manufacturer who offered to sell his goods to an association at a low price because he stated this would save him his selling expense, which was 7 per cent.

5. The relation of your inventory cost to your yearly sales brings in the matter of turnover. The more often you turn over your investment the more money you are making. Goods in this trade should be turned over at least twice a year, and you ought to turn them over four times a year and oftener if possible. If you were to turn them over four times a year, this percentage of inventory cost to yearly sales would average 25 per cent, although it might range up and down from that figure during certain periods.

Loans

"I PREDICT that within five years there will be very little money loaned by any banker in the United States to any merchant or manufacturer who does not present a statement showing detailed information not only regarding his true assets and liabilities, but also indicating that he is conducting his business in an efficient manner and that he absolutely knows his true costs."—Edward N. Hurley, Chairman, Federal Trade Commission.

Charging Car Rebates

Editor Motor World: I have contracted with the Canton Motor Car Co. for the Overland in this territory and received my first car yesterday. The Willys-Overland Co. has a system of attaching a card to each new car for the dealer to fill out with the purchaser's name, address, etc., when the car is sold. In order to insure his doing this they add $5 to the invoice price of the car and then rebate that amount to him when the report card is received at the factory.

Now, the car I have just received cost $615, freight $15, and this car-record fee, $5, which makes a total of $635. This was paid to the Canton Motor Car Co. on the 15th by check No. 1 (I am just starting in business). I was uncertain as to what to do with this charge of $5.

Would also like to know how to take this into consideration at the end of the month: (1) If the car is still on hand; (2) if the car has been sold and the rebate card mailed to the factory but not in time to receive their check in the month in which the sale was made.—O. R. Mummert, Alliance, Ohio.

The entry that you have made covering the payment and receipt of the Overland car is correct.

You understand, of course, that the account which you have opened under all other accounts on the debit side called Overland Car Record account will be transferred to a sheet similar to form 3 and this amount will be placed under the charge side with the memorandum that it was the $5 due you on No. 90-1374. Now, we will suppose that later on in the month you receive a check from the Overland company covering the refund due to your having returned the record card. This $5 would be entered on form 1 under all cash received, and under all other accounts on the credit side of form 1 it would be credited to Overland Car Record account and that amount transferred to the same sheet that you had made the charge of $5 on. This credit to the Overland car-record account will offset the charge that you made previously.

If you do not receive a settlement check within the month in which you are operating you would carry the balance due you from the Overland company in this account similar to your other assets, and if you will refer to page 32 you will notice that under the assets in the table of assets and liabilities you will find an asset called deposits with manufacturers. While this is not a deposit with a manufacturer it is an asset, and would be carried in this way until the account was settled from the factory.

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A Department of Better Mechanics

No. 8

REAR AXLE ADJUSTMENT ON THE BUICK D-45

AT least once a year the axle should be removed, taken apart, cleaned and adjusted, as any slight wear in the assembly multiplies quickly if not taken up. By this cleaning and adjustment the axle may be made to last indefinitely.

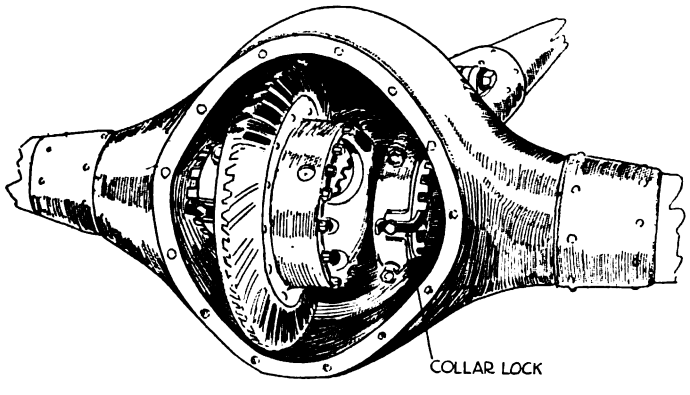


Fig. 1—The adjustment of the bevel ring is rendered accessible by removing the rear cover plate. The collar locks are taken off and then the whole differential assembly may be shifted to the right or the left

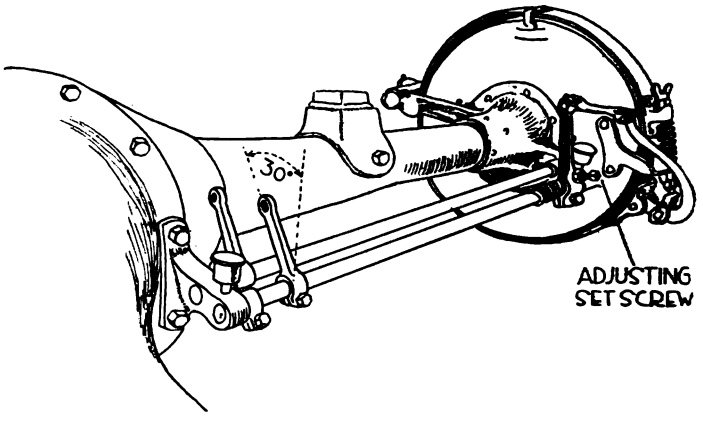


Fig. 2—To adjust service brake: First adjust set screw until bell crank makes 30-degree angle with vertical; make band concentric by adjusting it at rear; then turn butterfly nut until band clearance is 3/64 in.

Poor Adjustment

1—A grinding noise. This is usually caused by looseness between the driving gears. It may also be caused by worn teeth. Either necessitates a re-adjustment.

2—A peculiar click. When letting the clutch in, or when changing gears. This is due to slack in the driving system. Adjustment necessary.

3—An intermittent catch, or one that occurs at every revolution of the wheel. This may be caused by a broken tooth or part of a broken tooth catching. Tearing down necessary.

4—Actual failure of the axle to operate.

Preliminary Test

1—No preliminary test is necessary if symptoms 3 and 4 are present. Tear axle down at once and find cause.

2—To make certain that looseness is present, jack one wheel up and rock that wheel back and forth with the gears locked in high. A 2-in. travel, marked on the tire is permissible. Any amount greater requires an adjustment.

If bevel ring adjustment alone is necessary this may be done by removing the rear axle cover as shown in Fig. 1 and following the same method outlined in Adjustment. However, if more than this is necessary it is usually advisable to take the entire axle down, clean the parts thoroughly and make the adjustment when the parts are out where they can be properly seen.

Previous Articles

Subject	No.	Date of Issue
Overland—Main and connecting rod bearings	1	Dec. 13
Cadillac—Cam and fan-shaft driving chains	2	Dec. 20
Maxwell—Rear axle repairs	3	Dec. 27
Chevrolet—Clutch repairs	4	Jan. 3
Borg & Beck—Clutch adjustments	5	Jan. 10
Hudson—Oil pump adjustments	6	Jan. 17
Reo—Clutch adjustment	7	Jan. 24

To Remove Axle

1—Raise car from axle by an overhead chain block or hoist. *It can be raised so high that the drive shaft will bind on removing, and it is usually more convenient to do this to render the parts accessible.* A horse or block should be placed beneath each runningboard to prevent injury should the hoist fail.

2—Remove front floorboards.

3—Disconnect brake rods.

4—Remove saddles holding the vertical bearings on the driving yoke ring at the rear of the transmission.

5—Unscrew brass packing collar on sleeve of universal joint at rear of transmission.

6—Disconnect rear springs from their supports on the axle.

7—Raise and lower the car until the drive shaft slips from the universal, and slide the assembly out to the rear. *Do not allow the torque tube to drop onto the floor.*

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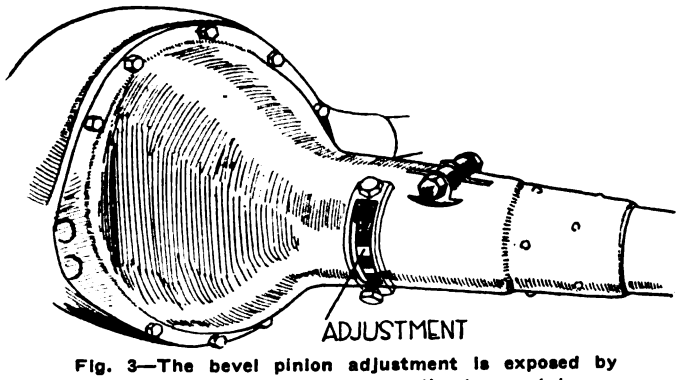


Fig. 3—The bevel pinion adjustment is exposed by removing the small cover on the torque tube

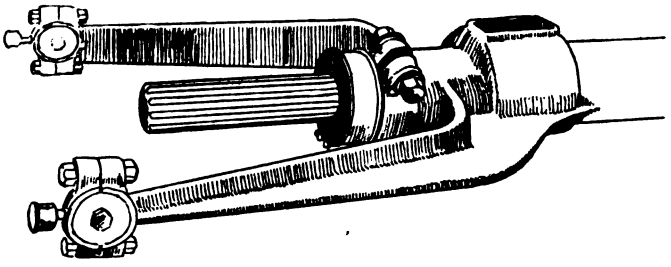


Fig. 4—End play in the driving yoke is removed by loosening the clamp screw at the end of the torque tube and turning the nut until the play has disappeared

8—Place the axle across two horses, with the torque tube resting on a third horse.

9—Remove hub caps. *This is not absolutely necessary, but has been found advisable to prevent denting or otherwise injuring them in the work.*

10—Remove flange stud nuts holding the driving flange to the wheel hub proper.

11—Draw drive shaft out with driving flange attached.

12—Remove front connections of radius rods to the torque tube.

13—Remove nuts holding main drive shaft housing to the rear axle housing.

14—Pull torque tube forward, removing it from the axle housing. The differential is bolted to this housing, and comes out with it. Place the assembly in a vise. (*It is not necessary to remove the rear cover of the differential casing by this method.*)

To Remove Wheels

1—Remove locking rings holding each wheel to the axle housing bearing. *The thread on the RIGHT wheel is LEFT hand and that on the LEFT wheel is RIGHT hand.*

2—Draw wheel off. The ball bearings in the wheels are not adjustable except for a small amout of end play. If much wear is noted, or the races or balls are chipped, *these bearings should be replaced.*

3—Examine the brake linings. The emergency, or internal expanding brake, has but little service, and rarely needs adjustment, which is provided on the brake rods, however. If greasy, the linings should be washed with gasoline.

To Adjust Service Brakes

1—With wheel removed, note whether the band is round, and whether all parts are worn evenly. Uneven wear denotes eccentric bands and this should be corrected by removing the band and springing it back to shape.

2—Measure the clearance between the band and the drum; it should be about 3/64 in. all the way around. If more, the band must be contracted as follows:

3—Turn set screw on outer brake lever so that the lever connected to the pull rod stands at an angle of about 30 degrees, inclined toward the axle housing, Fig. 2.

4—Loosen adjusting lock nut on rear half of brake band and turn the adjusting nut until the band is concentric with the drum. Tighten lock nut.

5—Turn the wing nut until the clearance between the brake and the drum is uniformly 3/64 in. *The wing nut should be snapped into its groove in the upper clip before determining the clearance.*

6—*Note whether the service brakes on both wheels have the same adjustment.* This should be the case to promote even wear and prevent skidding from uneven braking.

7—When installing axle in the car, adjust the brake lever so that the pedal will start contracting the brakes at the slightest pressure.

To Adjust Rear Axle

1—Remove straps holding differential to the drive shaft housing.

2—Remove differential. It is usually unnecessary to carry the tearing down further, unless the spider gears are worn or some part needs replacing. Any looseness or wear in the spider gears may be felt with the tang of a file.

3—Wash all parts thoroughly with gasoline, get the ring and pinion gear teeth dry and bright. This permits prussian blue to be effectively used in the adjusting and causes any interference of surfaces to produce a noise.

To Remove Drive Shaft

1—Loosen cross pinch bolt at the rear of the torque tube.

2—Remove pinion adjustment corner plate exposing pinion adjustment. See Fig. 3. Mark with a file the exact point the drive shaft projects from the torque tube.

3—Turn pinion adjustment to the right until free. *The drive shaft may now be drawn out to the rear.*

4—Clean all bearings with CLEAN gasoline and examine all parts for wear.

ROUGH ASSEMBLY

1—Replace drive shaft.

2—Screw pinion adjustment back until file mark on the drive shaft comes to its former position. The pinion adjustment is then the same as before.

3—Replace differential and bolt in place.

4—Remove any end play in the driving yoke by loosening the clamp screw at the end of the torque tube, shown in Fig. 4, and turning the nut until the end play is removed.

5—Tighten clamp screw.

Differential Adjustment

1—Coat the gear teeth with prussian blue.

2—With the adjusting sleeve locks removed, turn drive shaft as THOUGH THE CAR WERE GOING AHEAD. All adjustments should be made on that basis, as the gears are usually working in that direction.

3—Note appearance of the BLUED teeth after turning as directed. *The teeth should show a broad even contact across the entire width of the driving surfaces.* Ordinarily the position of the ring gear should not be shifted unless the position of the bevel pinion is also changed, as one depends upon the other.

4—Shift the adjusting sleeves, and the pinion adjustment until the two are balancing giving a broad contact the entire width of the gear teeth.

5—When properly adjusted the ring gear will have no side play, may be easily turned and spun without noise.

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6—Replace adjusting sleeve locks.

7—Replace differential in housing, slipping and bolting radius rods home.

8—Put on wheels. Adjust locking rings so that side play is removed.

9—Replace axles, bolt flanges in place and replace hub caps.

Replacing Axle in Car

1—Roll axle assembly beneath car. Be certain that packing cap and packing are in place on end of drive shaft.

2—Force splined end of drive shaft into universal joint at rear of transmission. *The car may have to be raised and lowered, and the engine worked slightly to permit this to be done readily, and at the least two men are required to do the job.*

3—Catch threads of the packing caps in place, and tighten the cap in place. *This may prevent the drive shaft from slipping out before it is anchored by the torque tube.*

4—Replace the saddle holding the lower vertical bearing cap on the driving ring. This may have to be driven into place, until the threads of the retaining bolts catch.

5—Replace upper vertical bearing cup.

6—Lower car, and attach spring ends to axle.

7—Connect brake rods. Adjust foot brake rods by the turnbuckles so that the brakes start to contract at the first pressure on the pedal.

8—Remove differential oil plug and fill housing to level of hole with heavy steam engine oil.

9—Grease and oil all parts.

MAINTENANCE

1—Every 1000 miles fill rear wheel hubs with soft cup grease.

2—Keep each grease cup full.

3—Keep oil level up to the filling plug in the differential housing.

4 — Have differential overhauled, cleaned and adjusted once every year.

Things Every Mechanic Should Know

How to Case Harden Steel

THE outer surface of any piece of soft steel may be made hard by case hardening. Its purpose is to increase the strength and wearing qualities of the steel. All machine work to be done on the steel should be done before the case hardening, as *grinding alone can be done afterward.* (If any part of the piece must be left soft, this may be done by covering that part with asbestos paste or paper.)

The Hardening Compound

Mix 9½ parts of fine charcoal with 2½ parts of table salt. Place 2½ parts of kerosene oil in a dish, and put with it as much sawdust as is required to soak the kerosene up. Now mix the sawdust and oil with the charcoal and salt. This compound may be used many times.

The Crucible

Get a piece of iron pipe long and large enough to hold the pieces to be hardened. Pack the pieces in this pipe with the hardening compound. Do not let one piece touch another, or touch the pipe side, but keep them well apart with the compound. Now close both ends of the tube with fire clay.

A large forge fire is necessary for heating the pipe and the pipe should be heated to a bright red heat. The length of time varies depending on the size of the pieces, and the depth of case desired.

Ordinarily two hours at bright red heat will give 1/16 in. case. This heat should be held as evenly as possible to give an even case and reduce warping effects.

To produce the maximum strength, two heat treatments are necessary after hardening. First heat each piece to a bright red and plunge in oil. Then again heat it to a dull red, and plunge. This will give a fine grain both in the core and in the case.

Straightening Warped Pieces

Uneven heat and uneven cooling warps the steel. Case hardened pieces can not be straightened by pressure or by pounding *as this cracks the case.* To straighten a warped piece of case hardened steel:

1. Find the high or "bowed" part. Mark this with a chalk line.

2. Heat the piece slightly—*never near a red heat.* (The amount of heat depends on the warp, and can only be determined by trial.)

3. Clamp the piece in a vise between the blocks as shown in Fig. 1.

4. Direct a stream of water at the chalk line. This will contract the long side and make the piece straight.

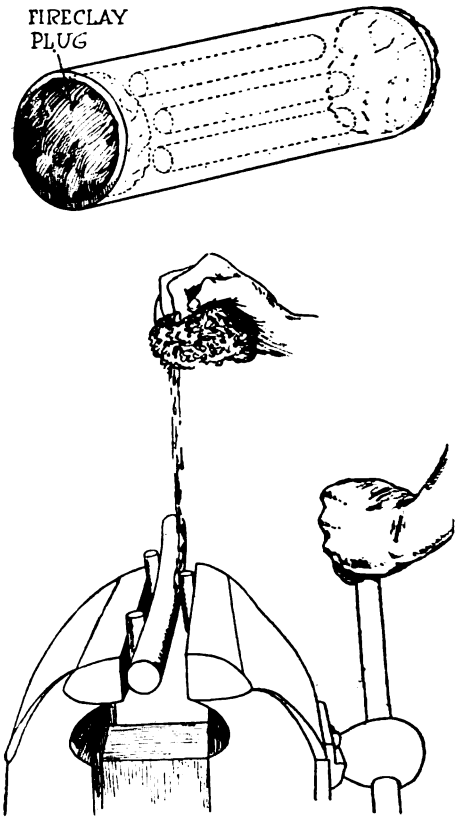


FIG. 1
Case-hardening steel. The pieces are packed in a pipe with the hardening compound—but they must not touch

Quick Case Hardening

If a thin case is desired, this may be applied quickly by heating the piece to redness and sprinkling the part to be hardened with potassium cyanide. Keep the temperature constant for 4 or 5 min., then plunge the piece in water or oil. An exceedingly thin case will result that will increase the wearing qualities of the steel, better its appearance and prevent rust.

La Grande on the Show List

LA GRANDE, ORE., Jan. 22—The dealers and garagemen in La Grande have united to put on an automobile show in February.

Crocker Star Buick Salesman

SEATTLE, Jan. 22—I. S. Crocker won first prize in a sales contest of the Northwest Buick Co. by selling $10,500 worth of cars during December. Dudley Fortin was second, with $9,000 worth. The contest, promoted by Sales Manager George Purdy, is regarded as very satisfactory in that it boosted sales during what ordinarily is a dull period.

Portland Show Jan. 27-Feb. 3

PORTLAND, ORE., Jan. 22—Portland's eighth annual automobile show will be held at the Armory Jan. 27 to Feb. 3. The Motor Car Dealers' Association of Oregon is sponsor.

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ANGLES OF THE LAW



By Geo. F. Kaiser

What Can He Do?

Editor Motor World: A question which will doubtless prove of general interest to distributers has arisen in connection with our rights as regards the disposition of a car ordered, and partially paid for, by a customer.

A certain customer ordered on Oct. 25, 1916, a car the contract for which called for delivery on Nov. 4, 1916. The particular car was specified and the customer's initials placed thereon. Two hundred and seventy-five dollars, in confirmation of the order, has been paid, yet up to date the customer has neither called for the car nor has he answered correspondence in its regard. The contract referred to permits of storage charges to the extent of $1 per day, after the suggested delivery date, and we have definitely advised the purchaser that we would charge him "dead" storage costs.

In view of the offering of the new model we are reluctant to longer carry this particular car in a stock, as the depreciation thereon will soon overbalance the customer's deposit, yet we hesitate to dispose of the car in consideration without the assurance that no technicalities so forbid.—Isotta Fraschini Motors Co., New York.

This is the Contract

No: B 465
New York, Oct. 25, 1916

Gentlemen:

I hereby purchase thru you one 4-cylinder Roadster body, Scripps Booth car, and extra equipment as specified below, to be delivered to me on later date or as soon thereafter as possible.

In consideration of your placing this order, I hand you herewith deposit of $200.....

and upon receipt of notification at the address given below that the car is ready for delivery, I agree to pay the balance of the total purchase price in cash or certified check and to remove the car from your premises within 48 hours.

(Storage to be charged at $1 per day if car is not removed at specified time)

SPECIFICATIONS: (Standard factory equipment)

.....

Price of car with Standard equipment.$825.00

EXTRAS: (Maroon)
.....Special Color.....Gratis

FREIGHT: (Including oil, gasoline and handling charges)..... 35.00

Total purchase price.....$860.00
Deposit 25.00
(Subsequently customer paid $250.00 additional) .....

Balance.....$585.00

REMARKS: .....
This deposit to apply against car No. c-6712 unless sold before Dr. Weber calls for delivery .....

Guarantee:—The guarantee on this car is the Standard Guarantee given by the factory, copy of which is printed on the reverse side of this contract. The purchaser expressly agrees that no claim will be made except as specially provided for in this agreement.

Salesman Arthur F. Byine (Signed)
Purchaser Dr. S. W. Weber.....
Bus. Address 65 W. 45th St.
Bus. Phone N. Y. C.
Res. Address.....
Res. Phone.....
By A. F. Byine.

Accepted
ISOTTA FRASCHINI
MOTORS CO.
By A. F. Byine

Indicate by an asterisk (*) address to be used.

N. B.—In consideration of the purchaser making the deposit above mentioned, the Isotta Fraschini Motors Co. agrees to return the deposit upon demand in case it is unable to tender delivery of the car within 30 days of the delivery date specified.

Ordered over phone.

When a dealer finds himself in a predicament of this kind there are several things that he can do. As the contract provides that storage is to be charged at the rate of $1 per day if the car is not removed at the specified time he can sit back and hold the car and keep marking up storage charges from now until the end of time if he is so inclined.

When he gets tired of holding the car, or some circumstance, such as the appearance of a new model, renders it advisable to dispose of it, he can notify the purchaser that unless the car is removed at a certain time he will consider the contract broken, the deposit forfeited and that he will sell the car as his own for what he can get for it.

A third thing a dealer can do is to give notice that unless the car is removed within the time specified in the contract he will sell it on account of the purchaser and sue for the difference between what the buyer promised to pay and what the dealer actually got as deposit and sale price.

Of course, the question of what is the best thing to do will depend on the circumstance in each particular case. Where the car can be sold at the contract price the dealer is better off than if he treats the contract as broken and keeps the deposit. When new models have come out, however, the best way is usually to sell it for the purchaser and credit him with the proceeds of the sale.

Notations on Checks

Editor Motor World: Kindly advise whether or not a notation on a check, for example, "paid in full for month of November," can be canceled by the party to whom the check is issued before the check is cashed, in case the check did not cover his November bill, and the party to whom the check was made wanted to cash it and then take up with the party issuing the check by correspondence about the balance of the account.—Association Garage, Trinidad, Colo.

Under ordinary circumstances a notation on a check "paid in full for month of November," or a similar notation, should be binding on the party to whom the check is given, and if he cashes it he would not be allowed to show that he did not receive the check as full payment.

Whether this notation is on the face of the check or on the back of the check may make a difference, however. I have heard of a case where when this notation was on the face of the check the party who received it claimed that it had been written in by the maker after it had been cashed and returned to him by the bank.

The court believed this claim and allowed the party who cashed the check judgment for the amount which he claimed was still due him.

If this notation had been on the back of a check and the party before cashing it had had to endorse by signing his name below the receipt I do not think the court would have come to this decision, as he would naturally be expected to put his name at the top. The usual practice among business houses is to send back checks which have notations like this if they do not want to consider them full payment, and I think that that is the better and safer practice.

Don't Stop Payment

Editor Motor World: In case a dealer while enjoying a good business should make a contract with some firm to deliver a large piece of machinery at a later date, same to be paid for on the installment plan, and the said dealer should give a check for one-tenth of the purchase price of the machine, dated and to be cashed at the date of the delivery of the machine, and then before the machine should arrive a turn of fate should plunge the dealer into a net from which he could not entangle himself without breaking his contract, could he stop payment on the check and break his contract withou a legal tangle?—A Reader, Alva, Okla.

Stopping payment on the check would simply mean that the party with whom you made the contract would sue you on the check and then turn around and sue you on the contract. The best thing to do if you are in bad financial condition at this time is to see the people with whom you made the contract, explain matters to them and try and see if you cannot straighten matters out. Don't stop payment on the check without any explanation or they will simply think you are trying to escape your obligations.

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Editorial Observation

Carry It Further

THERE is a big new ice skating rink in New York, and the proprietor has the germ of service in his soul.

Does a skater take an untimely tumble, a uniformed attendant instantly glides up to him with a whiskbroom and quickly brushes away the evidence of the skater's downfall.

The skater does not have time to ask for this service—does not even know he is going to get it. It is offered free, and, above all, it is given quickly. Then the attendant disappears.

Here is an excellent example of what can be done to gain and hold the good will of customers. It's a little thing, but how the customer does appreciate it!

It is gratuitous services such as this that the motorist appreciates most. They go to show that the garageman has the interest of his customers in his heart. He thinks. He is impelled to give this service not from a thought of personal gain, but because it pleases the customer.

Free air, free water for the radiator—these also come under the head of service. But the motorist has grown accustomed to this kind of service. He expects it as his due.

So the really wideawake garageman looks forward to carrying his service a little further—to doing things the motorist has not thought of yet as his just due.

And this whiskbroom idea is worth considering. Why wouldn't it be a good idea for the garageman to have a whiskbroom handy; have one of the garage attendants brush a motorist who has stopped a few minutes for gasoline. Or at least offer the whiskbroom to the motorist.

But the principal thought is—carry the service idea further.

He Is a Thief

COMMON courtesy demands a reply to a letter. And when a stamped return envelope is enclosed for the reply there is an even stronger obligation to answer that letter promptly.

Yet every day, thousands of letters go out enclosing stamped return envelopes and only a few of them are ever answered.

The dereliction is not confined to any one trade or industry. It is all-embracing; the same condition is to be found everywhere in the business world.

This is a serious matter. If a business man can't or won't answer a letter when he has merely to write "Yes" or "No" or put a pencil check on a dotted line; his brain is not capable of grasping the meaning of the word business.

Furthermore he is a thief. That stamped returned envelope is merely LOANED to him. It is the property of the sender. It is enclosed only for the convenience of the man receiving the letter.

And any man or any business firm which is thoughtful enough to go to this length to HELP another man or another firm is entitled to the courtesy of a reply of some sort.

Boys, be business men. Correspondence is the backbone of business. Without it there would be no business.

Answer your letters—promptly.

Play Safe

PLAY safe! Save your issues of MOTOR WORLD.

Every day we receive an increasing number of requests for back numbers of MOTOR WORLD. We cannot supply them except in rare instances. The cost of paper and of printing have mounted to such an extent that only enough copies of each issue can be printed to care for regular subscribers. Back issues become exhausted almost by the time a new issue is ready.

Certain departments of MOTOR WORLD, such as Repairshop Short-Cuts and Better Mechanics, will be reprinted in book form; but all the other good things will be lost to you unless you save your issues.

Play safe! Have these issues when you want to refer to them. If you like, we can supply you a binder at little cost in which you can save a whole year of MOTOR WORLD.

But whether you use the binder or not, PLAY SAFE!

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BETTER BUSINESS, JOBBERS SLOGAN

(*Continued from page 37.*)

ing. At present there are all kinds of packages, cartons and cases used by manufacturers of goods of the same nature and size.

Some spark plugs are shipped in tens and some in dozens and there is little uniformity. The majority of the members seemed to favor units of 10, 100 and 1000 for most articles, although the piston ring people urged dozens for their goods because 12 is a multiple of 4 and 6 and also fits well the 8 cylinder car.

Before definite action is taken the committee will send its data to manufacturers, asking their opinion as to the correct form. It is expected that this work will be largely completed by the Hot Springs meeting in June.

One argument for the 10 unit was that it enables a quick computation as to unit prices.

It is also suggested that cartons be labelled with cuts of the goods, so it will be possible to tell at once what is inside and also to use the carton for display.

FORD DEALER ASSOCIATIONS

The convention went on record as opposed to the practice of the new and numerous associations of Ford dealers of endeavoring to get long discounts through co-operative buying. This, it is considered, gives them an unfair advantage over the other dealers and places the Ford men in the semi-jobber class, which class is held to be a fallacy and an evil.

STANDARDIZING CATALOGS

It is suggested that jobbers' catalogs be made in a standard size, considerable work on this having been done by O. R. McDonald, of the Herring Motor Co., Des Moines. Six by nine inches was suggested as the size which is best and which effects the greatest paper economy.

PIRATE GOODS

The association frowned on the practice of a jobber of placing an order with a manufacturer, then listening to a non-advertising pirate manufacturer and then demanding that the legitimate manufacturer take his goods back or meet the price of the pirate.

DATED PRICE LISTS

It was suggested that discount lists be dated, else it cannot be told how old such a list is. There was considerable expression of unfavorable opinion regarding the issuance of red, white and yellow lists for different classes of customers, each list carrying different discounts.

UNFAIR PRICES

It was cited that a certain large manufacturer is supplying certain accessories to dealers at the same price as to the jobber, which makes it impossible for the jobber to handle these goods with profit.

It was also brought out that through the efforts of the association one grease gun maker has revised his discounts so that the jobber now gets 21 per cent instead of 10. The latter was held not to be enough because overheads range generally above 20.

TELEGRAPH CODE

The shipping code adopted by the association at its St. Louis meeting is about to be published and will be sold for $12.50. The association will have its exclusive sale for three months.

GUEST CARDS

Discussion as to whether salesmen should be admitted in order that they may get the spirit of the organization revealed that "guest cards" are already being issued and that these may be extended to cover any such cases.

EXPULSION

While no occasion has as yet arisen, the board of directors was given power, by a majority vote, to expel any member for cause.

SPECIAL MEETINGS

An amendment to the constitution provides that 7 directors or 10 per cent of the members may call a special meeting. Also, the number of directors was increased from 16 to 19. Also, one-third is to be elected every three years. The retiring president in this case, Sidney B. Dean, St. Paul, becomes a member of the board.

INVESTMENT

An additional $4,000 has been invested in bonds, making $20,000 that has been invested at a cost of $19,211.08.

MANUFACTURERS' CLUB DISBANDED

At a meeting of the Manufacturers' Club, Saturday morning, the club disbanded, and hereafter meetings of the manufacturers will be held as a unit of the main organization. There was found not to be a need for a separate formal organization of the wheel-within-a-wheel type and it was eliminated from a red tape standpoint.

Hewitt Truck Bill Favorably Reported

ALBANY, N. Y., Jan. 24—The Hewitt bill, which provides a new high schedule for the taxation of motor trucks, omnibuses, taxicabs and rented cars, has been favorably reported out of the Assembly and Senate committees. The motor truck, automobile and transfer interests have been vigorously opposing the bill. A 3-hr. hearing was given on the bill, at which C. T. Terry represented the National Automobile Chamber of Commerce, the Automobile Trade Association of New York and the Automobile Dealers' Association of New York. L. R. Gwyn spoke for the American Express Co.

Seventy-nine Exhibits at Montreal Show

MONTREAL, Jan. 29—Seventy-nine exhibitors showed 157 cars at the Montreal show, brought to a close last Saturday night. The Studebaker gold chassis attracted special attention, as did the Stanley steamer and Detroit Electric, the only cars at the show not propelled by gasoline. Legare Automobile, Ltd., and the Studebaker Corp. of Canada held a banquet at the Windsor Hotel, entertaining the seventy-five dealers and salesmen of the two organizations attending the show.

Outlining Intercity Reliability

CHICAGO, Jan. 29—Reliability contests in which teams from the major cities will compete probably will be instituted this summer. The contests will be very much along the same lines as the interclub contest originated by the Chicago Automobile Club. According to present times, the intercity run for this year will be a 3-day affair, starting from Buffalo early in August. A definite route and date and conditions are to be settled later.

May Revive Elgin Classic

CHICAGO, Jan. 29—Tentative plans for the revival of the Elgin road races this year were made to-day at a meeting of Elgin representatives with representatives from the Chicago Automobile Club, the Chicago Speedways Association and Chairman Kennerdall of the contest board of the A. A. A. If the decision is made to hold the race this year it may be made a championship event.

Bethlehem Making One-Point Plug

SOUTH BETHLEHEM, PA., Jan. 29—A one-point spark plug is being placed on the market by the Silvex Co., manufacturer of the Bethlehem five-point plug. A pneumatic shock absorber for use on Ford cars is another new product.

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The RETAIL NEWS

CANADA

The Toronto Automobile Wreckers, Toronto, Ont., is a new company recently formed.

McMullen & Lee, Ltd., Toronto, Ont., are now handling the Studebaker.

The Keyes Supply Co., Ltd., 199 Albert St., Ottawa, Ont., have taken on the representation of the Scripps-Booth.

The Riverdale Garage & Rubber Co., Toronto, Ont., are new Ford dealers.

John Millen & Son, Ltd., Vancouveer B. C. Branch, intends moving to 1259-1263 Granville. Larger premises is made necessary by the large volume of business. They will also increase their stock to meet the anticipated requirements.

The B. C. Garage has moved into larger premises, at 740 Broughton St., Victoria, B. C. It has lately been appointed distributer for the Hupmobile.

J. J. Smith and W. P. Lancaster, Vancouver, B. C., have opened business at 1272 Granville St., under the name of Auto Salvage.

The Try Me Tire & Rubber Co., Ottawa, Ont., has been appointed local representative for the Cole.

The Ajax Rubber Co., Toronto, Ont., has been incorporated with a capitalization of $1,000,000.

The Canadian Auto Co., Montreal, Que., 14-18 Victoria St., is handling the Oldsmobile and Metz.

SOUTHWEST

The Le Grande Garage, Sedalia, Mo., has opened a storage and salesroom at 204 East Third Street, to be known as the Le Grande Annex. Chandler and Maxwell will be sold.

Green & Cunningham, Tarkio, Mo., are erecting a garage on West Main Street, 40 x 120 ft., two stories, of concrete blocks.

Dan Arbogast, Unionville, Mo., has discontinued his agency for the Overland and his supply station.

Crane & Anderson, Chandler, Okla., are contemplating taking over a building for addition to their garage business.

E. C. Motter, Lyons, Kan., has purchased the garage business of A. V. Sturgis.

E. W. Willard, Morrill, Kan., is erecting a garage building.

The Rice-Sturtevant Motor Co., Kansas City, in the eight floor of the Traders' Building, has taken on about 100 sq. ft. of additional space on the same floor. The company is a Ford dealer, and does a big business in making commercial bodies. The latter department has grown rapidly. A number of skilled workmen have also been taken on.

Max Kelley, Fowler, Kan., has opened a Ford garage in the Thampson Planing Mill Building. C. D. Zink is in charge.

The Central Garage, Mulberry, Kan., was recently severely damaged by fire, smoke and water. Most of the 30 cars were rolled to safety.

Byron Bunker, a member of the Norton Motor Co., Norton, Kan., has sold his interest to his partners, Forsythe & Loper.

E. Laherty, Parsons, Kan., has purchased the Parsons Vulcanizing Works, 2124 Main Street, from B. C. Holman.

B. F. Brokhausen, California, Mo., is putting the finishing touches on his new garage, to sell the Ford.

William True, El Dorado Springs, Mo., has begun work on a new garage on South Main Street, brick and stone. The rear is to be double-decked.

H. E. Hinton & Son, Moberly, Mo., have bought J. Williams' garage. They will carry accessories.

The Jefferson Automobile Co., Jefferson City, Mo., has leased the first floor of the Masonic Building, which will be remodeled and used for a garage.

The Huntsville Motor Co., Huntsville, Mo., has purchased the Huntsville garage, formerly operated by Dameror & Lynn.

The Parish Motor Co., Sikeston, Mo., has been incorporated for $7,000. Stockholders: L. T. Parish, John Fox, and L. J. Ables. They will do a general and repair business.

William Palmer, Slater, Mo., will build a two-story brick garage, 50 x 150. The garage will feature a reception and rest room, and will be provided with an electric elevator.

The Mississippi Valley Motor Co., St. Louis, wholesale distributer of the Oakland, will move into new quarters, 3137-39 Locust Street, Feb. 1.

C. H. Tripp, Brimson, Mo., will build a 40 x 60 garage. He will carry accessories, do repair work and have the agency for an automobile, not yet decided upon.

H. D. Sterling, Lees Summit, Mo., will build a new garage.

Strong & Duckworth, Mansfield, Mo., will build a garage.

Brandon & Dillenbeck Motor Co., El Dorado, Kan., has opened a garage and shop.

H. R. McLain, Excelsior Springs, Mo., owner of the Elms garage, will greatly enlarge and install latest machinery. Supplies and accessories will be carried.

Slossen & Ackerson, Independence, Mo., have purchased the Strodtman-Marshall garage.

The Wheeler-Page Garage Co., Marshall, Mo., has taken over the interests of the Blosser Bros., Hupmobile dealer.

Frank Shy, Leeton, Mo., will build a 50 x 150 garage. The latest machinery for repairing will be installed.

The Booneville Auto Co., Booneville, Mo., is remodeling its building.

Harry Hendrickson, Brimson, Mo., lost his garage by fire from a cigarette stub dropped in a pool of gasoline. There was no insurance; $2,600 loss.

The Triangle Improvement Co., St. Louis, J. W. Shaw, president, E. L. Kirtley, secretary, and C. Truitt, treasurer, will open a new garage at Locust and Leonard Streets.

William Palmer, Lexington Mo., has let the contract for a two-story garage to cost $20,000. The building will be of brick, with stone trimming, 150 x 50, with steam heat. Besides storage capacity for more than 60 cars, the building will have a large showroom and supply stock, reception rooms, electric lift, modern shop equipment and paint shop.

J. M. Thomas & Son, Marshall, Mo., have leased the C. L. Reppenhagen Garage and moved their stock of Paige and Ford cars to the new location.

The Gary Motor Sales Co., St. Louis, has been organized to sell Gary trucks in St. Louis territory. R. D. Bloom is manager. Quarters are at 908 Chestnut Street.

The Western Motor Co., formerly at 1702 Grand Avenue, Kansas City, Mo., distributer of the Inter-State and Davis, has moved to the fifth floor of the Firestone Building, Twentieth Street and Grand Avenue. F. G. Bader continues as president and manager. A. H. Howard, formerly in charge of the retail, is now sales manager. G. E. Parrish is now retail sales manager ard G. F. Bader continues in charge of parts and service.

The Commerce Motor & Supply Co., Baxter Springs, Kan., has purchased the Motor Inn.

Horace Smith, Minneapolis, Kan., has contracted for the Dort agency in Ottawa County, Kan.

J. J. Pierson, Oswego, Kan., will erect a two-story, fireproof garage, 50 x 150.

The Anderson Automobile Co., Muskogee, Okla., has incorporated for $5,000. Incorporators: A. T. Woods, A. B. Madden, O. A. Greathouse, Muskogee.

Fred C. Pickell, Howard, Kan., has leased his garage to Colonel Boone.

Edward Glasco, Howard, Kan., has sold his garage to M. Christianson of Hartford, Kan.

The Chevrolet agency, Hutchinson, Kan., formerly held by Burr Bros., has been purchased by Lowe Bros., and Louis Lowe has come from Kansas City, Mo., to take charge. He plans to install an office and salesroom in the garage and already has a shipment of cars on hand.

W. P. Moore, Hutchinson, Kan., will move to Wichita, Kan., where he will engage in the automobile accessory business.

The Newton Auto Co., Newton, Kan., is remodeling its garage and building an addition, 40 x 50, at the rear, which will be used as a machine shop. A new salesroom will be built at the front and a new concrete floor laid throughout.

The Denison Auto Co., Denison, Kan., has enlarged its garage and installed new equipment

George E. Quimby, Paola, Kan., is enlarging his garage. He has taken a lease on the entire lower floor and basement of the Walthall Building, in which he will be able to store 100 cars.

Stephen S. Shiverms and Merril Whitehill, Arkansas City, Kan., have bought the Union Garage.

George Johnston, Colby, Kan., will run a gare in connection with his blacksmith shop, to which he is building an addition.

Charles Parton and Wilbur Beaumont, El Dorado, Kan., will open up their garage, repair shop and sales agency in the Beaumont Building soon.

W. L. Shively, Eureka, Kan., has purchased the Grant interest in the Grant & Shively Steam-Heated Garage.

Ira Freel, Goff, Kan., is the new partner in the garage of Clifford Jerome. Freel was a student in Rahe's automobile school, of Kansas City, Mo.

T. J. Gilson and Ervin Haskin, Horton, Kan., have bought the garage and welding plant of A. J. Garrison & Son. Gilson will have charge of the motor livery and Haskin the repair work.

Charles Cruse, Abilene, Kan., is erecting a 47 x 120 brick building to handle repair and equipment work on Ford cars. A garage will also be maintained.

Francis Williams, Baldwin, Kan., will open a garage in the Michelson Building, making a specialty of repairing Ford cars.

The Central Kansas Motor Co., Atchison, Kan., has taken over the business of the Studebaker Garage, 216-220 South Santa Fe Ave. The new company has a territory of fifteen Kansas counties for Studebakers. The officers are: R. J. Laubengayer, president; E. J. Lutz, vice-president; R. C. Carlisle, secretary; Metz Wright, treasurer F. S. Adams, sales manager; E. C. Laubengayer, service manager. C. W. Thompkins and Frank Adams will control the management of the wholesale trade. The used car department will be directed by J. A. Donmyer. The new company has taken a 5-year lease on the present building with the expectation of leasing additional floor space.

Earl Brandon and Robert Dillenbeck, El Dorado, Kan., have opened a garage to be known as the Brandon & Dillenbeck Motors Co., selling the Dodge.

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The Kardell Motor Car Co., St. Louis, has been appointed distributer of the Kelley-Springfield truck, the territory allotted including eastern Missouri and southern Illinois. E. L. Clifford and T. F. Strong have been added to the sales force, and George Schleicher, district factory representative of the Kelly-Springfield Motor Truck Co., also makes his headquarters with the Kardell company.

The White Automobile Repair Co., Chanute, Kan., is re-equipping its old location at 219 West Fourth Street, making it into a paint shop. A dustproof drying room is one of the features.

Lutz & O'Neal, Wilson, Kan., have purchased the Golden Belt Garage.

W. C. Wauhus & Son, Taston, Kan., are going to open a garage in the east part of town.

Arthur Dorsey, Fort Scott, Kan., has purchased the Crescent Garage from Dudley Bishard.

George Hornbeck, Hamlin, Kan., is going to open a garage, doing supply and repair work.

The Havana Light & Power Co. will open a garage in Independence, Kan., near the I. O. O. F. Building. The edifice will be a one-story brick, 50 x 140.

The Vincil Auto Co., Independence, Kan., has opened. The agency for the Marmon, Chalmers, Saxon and G. M. C. trucks has been obtained. A repair and storage department will be maintained. Peake Vincil is manager, Edwin S. Vincil is secretary, C. V. Cromwell is salesman, Jack Hughes is service manager.

The Olson Blumberg Motor Co., Kiowa, Kan., handling supplies and accessories and the agency for the Velie, will open soon.

The A-B-D Motor Co., Kansas City, will be actively managed by E. Bierwirth, president of the company, beginning Feb. 1. Bierwirth has been treasurer and manager of the National Paper Box Co. of Kansas City for nearly 20 years. Last August he organized the A-B-D Motor Co., with the agency for the Chandler, but remained a silent partner, K. L. Day managing the company. The company was organized for $50,000. Bierwirth is contemplating larger quarters for the business.

The Denmo-Kansas Sales Co., 1908 Grand Ave., Kansas City, was opened recently by Louis S. Frith. Frith was formerly a dealer in accessories on the Pacific Coast. He will handle the Denmo and Atterbury.

Brown & Holland, Little Rock, Ark., has opened a new electrical repair shop at 324 West Sixth Street, and will sell and furnish service on Bosch magnetos and Bijur starting systems.

The Motor Truck Sales Co., Little Rock, Ark., has been formed to distribute Smith-Form-a-Trucks in that state. R. C. Morgan is manager and the salesrooms are at 519 West Markham Street.

The Macon Motor Sales Co., St. Louis, which was organized to sell the Macon cars when placed upon the market, has bought a site for a two-story building at Locust Street and Leonard Ave., the west end of the row. A specially designed building will be erected.

The International Harvester's St. Louis branch has been opened at 3116 Locust Street. L. Barnabas, formerly manager of the city salesroom in Chicago, is manager. D. C. Rose, also of Chicago, is assistant manager. B. P. Hummel, former St. Louis manager, will become district sales manager. A 24-hour service department is to be maintained.

The Auto Device Sales Co., St. Louis, will handle the Perry Lock in that territory. The company has offices at 300 Third National Bank Building and a salesroom at 212 North Sixth Street.

R. M. Burgess has been named district manager for the Briscoe Motor Corporation to cover Missouri, Arkansas, Tennessee, Louisiana and Mississippi. He will make his headquarters with the Briscoe Motor Sales Co. of St. Louis.

The Bleeck Automobile Co., St. Louis, will sell Glide Light Six car. Salesroom has been opened at 2914 North Grand Ave.

SOUTH

Lee Caro, Memphis, Tenn., has bought out his partners in the Allen Motor Car Co. No change in plans is anticipated.

The Price-Burroughs Motor Car Co., Richmond, Va., distributer for Mitchell and Briscoe cars, has opened new salesrooms at 608 West Broad Street.

J. B. Kohen, Richmond, Va., has been made manager of the retail accessory department of the Kaehler Accessories Co.

Sanford Bros., Chattanooga, Tenn., are now representing the E. A. Laboratories Co., Brooklyn, N. Y. Their territory includes the West to the Pacific Coast and the South to Florida.

COAST

Hanson Bros., of the Dublin Garage, Dublin Cal., have remodeled and renovated the garage building, adding a salesroom for supplies and Studebaker cars.

Leach-Frawley Motor Co., with J. W. Frawley in charge, opened attractive sales, service and display rooms at 999 Geary Street, San Francisco, and will handle the Dort.

The Lichtenberger - Ferguson Co. has opened a San Francisco branch at 1211 Van Ness Ave., with L. H. Coppel in charge. The branch will act as distributing center for Norwalk tires for northern California.

The United States Rubber Co. has opened a service station at 1207 Van Ness Ave., San Francisco, exclusively for solid tire service.

The H. V. Carter Co. distributer of the Marion-Handley line in northern California, entered the San Francisco field and opened salesrooms at 714 Van Ness Ave.

NORTHWEST

The Twin City Rubber Co., Minneapolis, will open salesrooms Feb. 1 in a new building at 1125 Nicollet Ave.

The D. A. Odell Motor Car Co., 129-131 Tenth Street S., Minneapolis, has bought the Waldref Motor Car Co., St. Paul, 172 West Fifth Street, Pierce-Arrow distributer in the southern part of Minnesota. The Odell company now has the entire state, with agencies in the Twin Cities and Duluth. F. P. Boran is manager in St. Paul, and Paul Hoffman at 307 East Superior Street, Duluth.

N. P. Hansen & Son, Willow City, N. D., have begun a brick garage to cost $6,000.

John Raders, Dallas, S. D., has bought the Weis Garage.

F. J. Kieser, 112 Oak Street, Anaconda, Mont., has sold to Cliff Tidd a half interest in the Anaconda Tire Shop.

D. C. Freiberg, Cleveland, Minn., has bought the Groh Garage.

The Times Square Auto Supply Co., St. Paul, is a new branch of the New York company at 118 West Sixth Street. J. T. Boyce is manager.

H. A. Walker, Northfield, Minn., has bought the J. S. Drake interest in the Central Garage.

H. T. Graves, Bessie, N. D., will open a garage.

Geo. A. Morse, Inc., Minneapolis, has succeeded to the Tri-State Automobile Co., 1225 Hennepin Ave., thus acquiring the Northwestern distribution of the Inter-State car. The St. Paul agency has been taken by the Oldsmobile Co., 343 N. Exchange Street.

Gus and Jake Chellin, Litchfield, Minn., have leased the Welch garage.

The Marshall-Racine Rubber Co., Minneapolis, has moved to much larger quarters in a new building at 1316 Harmon Place, where it has three floors with storage capacity for more than 10,000 tires. The company is Northwestern distributer for the Racine company.

H. B. Knudsen, Duluth, will consolidate all his business March 15 into a three-story building at Second Ave. East and Superior Ave. This will include the Knudson Automobile Co., which will have the main floor and basement.

Leroy Eschner, St. Paul, local manager of the Winton for four years, has taken over the plant and equipment and will operate it as the Eschner Motor Co. He has been with the company 11 years in Chicago and the Twin Cities. A small car will be added, it is said.

J. A. Paulson, Little Falls, Minn., Chevrolet dealer in two counties, has transferred his sales business here from Royalton, Minn.

The Hoff Oil Co., St. Paul, has begun building an $8,000 filling station on Main Ave. between Fifth and Sixth Streets.

H. Smith, Whitelesh, Mont., has bought the Cecil Smart Garage.

The United Motors Co., Livingston, Mont., has been incorporated at $300,000. R. R. Ege is president.

Ernst Bros., La Moure, N. D., Clark and Ira Ernst, have bought the A. H. Johnson interest in the Ernst Bros. & Johnson garage business.

Charles Schlief, Rockford, Minn., will build a garage.

Nelson Story, Jr., Bozeman, Mont., will build a garage on Main Street.

A. Weidenboeft, Owatonna, Minn., with Owen Gierhart and Elmer Denker, formed a partnership to open a garage Feb. 1.

David Kennedy, Jr., Comfrey, Minn., has bought the Thomas Cullen Buick agency.

John T. Imgrund, Brainerd, Minn., has bought the T. R. Smith garage and agency and will put his son, J. F. Imgrund, in charge.

Ray C. Moore and A. G. Peterson, Harvey, N. D., have dissolved partnership and Peterson will continue the business.

Walter von Wald, Groton, S. D., has bought the interest of Roy Steel in the von Wald & Steel Garage.

Western Sales Co., Bismarck, N. D., is remodeling its plant.

J. L. Moore, Malta, Mont., is building a garage.

Hanson & Prisch Auto Co., Dell Rapids, S. D., succeeds the Amund Hanson Auto Co., W. J. Prisch buying an interest.

McReady & Abrahamson, Malta, Mont., have opened a garage.

William Brener, Westhope, N. D., has bought Charles Zeitler Garage.

H. W. Boriand and Ovila Lamoreaux, Dunseith, N. D., have formed a partnership to open a garage.

Cook & Staley, Sturgis, S. D., have given up the lease on the Wilson Garage to its owner.

Jones & Wilson, Wagner, S. D., have opened a garage in the Therber Building.

The Carlton Auto Co., Carlton, Minn., has sold out its fixtures to the Cloquet Auto & Supply Co., Cloquet, Minn., which will operate it.

Kallewig Bros., Grove City, Minn., have bought the Knick Garage.

Philip Christenson, Flaxton, S. D., has bought the Flaxton Garage from John Rosell.

The Minot Auto Co., Minot, N. D., will build.

Springen Bros., Mayville, N. D., lost their garage by fire. Loss, $19,000.

J. E. Paulson and E. N. Scherlie, Little Falls, Minn., will open a new garage and repair shop.

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A. D. Christensen and Louis Howser, Freeborn, Minn, have bought the interest of their partner, A. D. Jacobson, in their garage.

The E. G. Smart Garage, Whitefiesh, Mont., has been sold to W. H. Smith, of Kalispell, Mont.

John Schmauss, Lake City, Minn., will build a garage, 75 x 125.

Dahlberg & Son, Hopkins, Minn., are building a garage.

EAST

The Hall Motor Truck Co. of New England has been formed in Boston, with E. Arthur Robinson as general manager. He has been in the real estate business for a number of years. Salesrooms have been opened at 1123 Commonwealth Ave.

The Lenox Motor Co., Hyde Park, Mass., has opened salesrooms at 893 Boylston Street, Boston, Mass., for the sale of tractors and cars.

Day Baker, who has returned to Boston to take on motor trucks, has secured the agency for the Hurlburt for New England.

J. C. Bloomberg, Gloucester, Mass., is to erect a garage.

Karl Bostel, Newport, R. I., is erecting one of the largest garages in the state.

F. J. Vincent, Boston, Inter-State agent, has taken over the Maine territory.

Percy Ford, well known in accessory circles, has formed a company in Boston to handle the Hudford unit for Ford cars.

The White Co., Boston, has placed J. E. Cunningham, formerly agent for the Republic trucks, in charge of its truck department.

Frank E. Wing, Boston, New England Marmon agent, has placed an agency at Springfield with the Beaver Motor Co.

The Charles Motor Co., Boston, Briscoe agents, has moved to 167 Massachusetts Ave.

The Fowler Co., Springfield, Kissel dealer, has appointed Harry E. Jenks sub-agent at Ware.

The Springfield (Mass.) Reo Co. has taken over the agencies in western Massachusetts.

R. E. Arter, Providence, R. I., has been appointed manager of the Federal Motor Co.

The Atkinson Automobile Co., Wilmington, Del., Peerless distributer, has bought a large property owned by the Security Storage & Warehouse Co., at Pennsylvania Ave. and Clayton Street, which will be remodeled and converted into one of the largest garages and salesrooms in the state. Special accommodations will be provided for chauffeurs of cars which are kept there. The company has established a branch in Chester, Pa. F. R. Atkinson is president and A. M. Porter secretary and treasurer of the company.

W. H. Ryan, Wilmington, Del., who has been in the gasoline and oil business at Thirteenth and French streets for some time, has branched out into the tire and accessory business.

Robert F. Black, formerly with the factory of the International Motor Co., at Allentown, has been made manager of the Philadelphia branch, handling Mack and Saurer trucks.

The Scanlon Auto Supply Co., Rochester, N. Y., has been given the territory consisting of the city of Rochester and five surrounding counties by the Amazon Tire & Rubber Co., Akron.

The Oldsmobile Co., New York, has started construction of what will be one of the largest service stations in the East. It is located in West Sixty-fourth Street, near Broadway, and covers a plot 100 x 150 ft. Five floors will contain 70,000 sq. ft. of space.

George G. Brownlee, manager of the Tioga Automobile Co., handling the Hupmobile in Philadelphia for several years, has taken on the Nelson car for eastern Pennsylvania, New Jersey and Delaware.

The Oldsmobile Co., 231 North Broad Street, Philadelphia, has been given up by the factory as a branch and turned into an agency. F. C. Seitz, manager of the branch, is now vice-president and general manager of the agency. C. H. Larsen, of the Cuttin-Larsen Co., New York distributers of the Oldsmobile, is president of the new concern.

H. B. Schwartz, of the Central Motor Co., Reading, Pa., has purchased the Boyer Hotel, 1000 Penn Street, on which he will build a six-story sales and service station.

MIDDLEWEST

The Mitchell Motors Co., Racine, Wis., is going to open a new branch distributing and service station in Wichita, Kan.

The Reid Auto Co., Grand Rapids, Mich., National, Auburn and Republic truck dealer, has fitted up the room at 131 Michigan Street, adjoining the present showroom, for the exclusive sale of accessories.

H. L. Dow and **J. H. Clark,** Gladwin, Mich., are erecting a garage, 44 x 110.

Knight & Matzen, Flint, Mich., have opened a sales garage and will handle the Studebaker in that city and both the Studebaker and Ford in Clio.

Earl E. Copley, Decatur, Mich., new Ford dealer for the township of Decatur and Hamilton, has moved to his new salesroom.

The Quincy Garage & Supply Co., Calumet, Mich, has changed its name to Fallon Garage, and is now occupying its new $15,000, one-story garage, 115 x 60, located on Hancock Street. The company will handle the Ford, Buick, Packard and the Stegeman truck.

The Paige-Overland Co., Port Huron, Mich., organized by Emerson M. Paige and Earl L. Paige, has secured the Overland agency for the county of St. Clair.

Charles O'Lone, Monroe, Mich, proprietor of the O'Lone Garage, has sold an interest in the business to W. G. Henrich. The new partnership, to be known as the Central Garage, will take possession of the building now occupied by the Monroe Hardware Co. March 1 and will convert it into a garage and salesroom. The company has the agency for the Reo, Paige, International truck and the Maxfer Ford truck unit.

Ira S. Daines, Benzonia, Mich., has purchased the Benzonia Garage and will handle the Ford and Reo.

The Chippewa Automobile Co., Sault Ste. Marie, Mich, will soon start contruction work on a new $12,000 garage, 207 x 57, to be located on Spruce and Arlington Streets. The present garage will be maintained for a repair shop. Besides the Abbott-Detroit, the company has the agency for the Maxwell and Overland. The present officers are: Fred B. Raymond, president; John Connolly, vice-president; Herbert W. Runnels, treasurer, and C. C. Collins, secretary and treasurer.

Jones Bros., Vassar, Mich., have taken possession of the garage purchased from E. C. Bolt.

William L. Biber, Grand Rapids, Mich., distributer for Acme trucks, changed his headquarters from the Storage Garage to the garage operated by Paul Gee, in connection with the Chalmers salesrooms, at Michigan Street and Lafayette Ave., N. E.

The Farmers' Auto & Machinery Co., Bay City, Mich., at the annual stockholders' meeting held in their new office on East Midland Street, elected the following officers: Peter J. Oswald, president; Paul Guoan, vice-president; Otto J. Manary, secretary, and John Buechler, treasurer.

Joseph Thompson, Ypsilanti, Mich., has leased the building on East Cross Street formerly occupied by the Crown Fender Co., where he will move his Dodge service station.

Harry Newman, Chicago, has taken the distribution of the Hal 12 and will hold open house at his salesrooms, 2447 Michigan Blvd., during the Chicago show.

The Electric Equipment Service Co., Omaha, incorporated with a capital stock of $10,000, will engage in a general repair business. The incorporators are Herman W. Aspegren, Reginald T. Hazell and Henry A. Wendland.

The Michigan Tire Co., Grand Rapids, Mich., has opened a wholesale department at 232 Michigan Street, N. W., in order to take care of increased business. The former quarters occupied by the concern, at 218 Michigan Street, N. W., will be maintained for retail trade and as a service station.

The Schweer Automobile Co., Shawano, Wis., has awarded contracts for the erection of a new garage and repairshop building, 50 x 120, two stories and basement, of brick and tile construction.

R. Reeboldt, 622 Alabama Street, Sheboygan, Wis., is having plans prepared for a one-story brick garage, 50 x 100.

Fehrer Bros., Beaver Dam, Wis., who are building a new garage and service building, have been appointed Maxwell dealers for Dodge county. The firm also represents the Velie and Reo.

Morris Richman, Madison, Wis., has disposed of his garage and repairshop to engage in sales and service business with I. D. Segal at Appleton, Wis.

The Hub City Implement Shop, Plymouth, Wis., has been organized to deal in agricultural implements, motor cars, tractors, etc. Temporary quarters have been established on Caroline Street, pending the completion of a warehouse, garage and repairshop on Mill Street.

Greissinger Bros., Park Falls, Wis., have discontinued their horse livery business and will devote their attention to the motor livery, sales and service. The livery stable is being converted into a garage and repairshop.

The Farmers' Implement Co., Seymour, Wis., has broken ground for a garage, warehouse and service station, 50 x 100.

Silverthorn Bros., Wausau, Wis., have formed a partnership to deal in motor cars, tractors and trucks. The firm has been appointed Oakland dealer and will handle the Universal tractor.

The Auto & Implement Supply Co., Plymouth, Wis., is now owned by Henry and John Ter Maat, who have purchased the third interest of H. Manthei.

The Service Auto Co., Seymour, Wis., has been incorporated with a capital stock of $20,000 by L. H. Waite, William Beck and August Holtermann.

Chas. T. Bird, connected with the Pangborn Corp. some years ago as sales engineer and for the past year with the Mott Sand-Blast Co., resigned Jan. 1 to become associated again with the Pangborn Corp. as vice-president and works manager, in charge of engineering and production.

Clayton Frie, Marquette, Mich., has entered into partnership with Elmer Jones, proprietor of the Jones Garage.

Zina Enos, Marshall, Mich., has purchased the interest of O. L. Linn in the Briscoe agency.

Jones Bros., Bancroft, Mich., have taken over the Bolt Garage.

The Cushman Auto Sales Co., Battle Creek, Mich., is erecting a $12,000 addition to its garage at 235 West Main Street which will be used exclusively as a service station.

Fred W. Stebbins and C. W. Wespinter, Hastings, Mich., will erect a garage this spring, 82 x 132, at Church and Court Streets.

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A New Merchandising Idea Invades Chicago

It is Selling Cars on Their Looks and the West is Taking to It Kindly

CHICAGO, Jan. 29—The aristocracy of motor merchandising has made a real invasion of the West. From the way it is being received by the dealers it seems to be here to stay.

This aristocracy is typified in the automobile salon which opened this morning in the Elizabethan Room of the Congress. It is similar to the salon held during the past in the Astor in New York, but, while this is the second salon for Chicago, it is the first real luxury show of cars that has ever been staged in the West.

Last year there were four cars—White, Simplex, Brewster and Lancia—displayed in an irregularly shaped breakfast room at the Auditorium. This year there are eleven—White, Simplex, Brewster, Lancia, Locomobile, Daniels, Fageol, Murray, Doble, Disbrow and Marmon—and they are fittingly set in a luxurious room.

There is nothing mechanical or utilitarian about the show. It is a display of costly bodies, multitudinous conveniences, high-priced leather and all those things that money can buy but which don't necessarily make the car run any better.

No chassis orations are permitted. The twenty-one cars on view are set up for looks and not for the merchandising of their mechanics. If a salesman wishes to raise the hood and show the motor he may do so, but the general impression—and the rule—is that the cars don't have to have their interiors vouched for and the man who can afford them doesn't care what's inside so long as they run when he wants them to.

This is largely a new merchandising angle for the West. Out in the broad expanses of America cars are being sold because they run and ride comfortably—often only because they run. This idea of paying $12,000 for a car such as the Fageol, is new. But the dealers—some of whom obviously are from the very far West—are keenly inspecting the exhibits. Many of them are paying $1 per ticket, which is twice what the Coliseum show costs. This is not mere theory. To be exact, within an hour after the show opened $31 was paid for tickets and they were still selling.

While the aristocracy merchandising angle is new, it is not impossible, for there are millions of money in the West, especially in the cities. Some of these Western families have more than they know what to do with, and they are just as keen for exclusiveness as are their Eastern brethren. In each city a dealer can sell a few at least of these cars, and each sale represents a good profit and a customer who isn't going to quibble over $3 worth of free service.

The Fageol Motor Co., Los Angeles, plans to build 300 cars during the next 18 months. There should be little difficulty getting rid of these if proper representation is secured. The chassis sells for $9,500 and the body on the car shown costs $2,500, making the car $12,000. Dealers may get their own bodies if they wish, but Fageol will insist that the bodies used be up to the Fageol standard of class, having hardwood floors, ivory handles and such items.

The Murray sells for $2,500 and up, and Murray plans to build 500 this year. The other cars are similarly high-priced—and they all look their parts.

Bodies for these cars cost from $2,000 up, depending on the tastes of the buyer, and body building of this class seems to be making considerable strides. Even in the lower-priced cars, such as the Overland and Oakland, the Chicago dealers are fitting special bodies and charging more money for the added class. They find it pays well.

The salon is put on by the Automobile Salon, Inc., which also put on the Astor salon in New York. The manager is Leon Rubay, formerly of the White but now a body builder in Cleveland. He built many of the bodies seen in this show. The remaining directors of the Salon are: Emanuel Lascaris, for years an importer in New York; R. W. Schuette, Rolls-Royce importer, and T. E. Adams, of the Adams-Lancia Co., New York. The Salon thus is fostered in reality and in spirit by importers of high-priced foreign types.

The Fageol and Disbrow are New

TWO new cars which were not seen at the automobile salon in New York are at the corresponding event in Chicago. These are the new Fageol car and a new sporting and speed design by Louis Disbrow. In addition, C. P. Kimball is showing some bodies that were not seen in New York, including a striking touring car with a number of new and ingenious features, mounted on the new Fageol chassis, and a landau with some interesting characteristics, mounted on the Doble steam chassis.

The new Disbrow car, which is the real new thing at the salon, is a product of the shop of Louis Disbrow, formerly a star driver of racing cars. It is entirely a speed design and is shown in a special aluminum body made by Disbrow in his Cleveland plant. There is very little to the body besides the hood over the motor and a pair of racing-style seats. The bodies are made up individually to suit the purchaser. A unique point is the employment of bicycle-style fenders which turn with the front wheels.

The power plant is a product of the Wisconsin plant, designed according to Disbrow's specifications. The car is furnished in two models, which are interchangeable in all respects and only differ in the engines. Both of these are Wisconsin T-heads, with the cylinders cast in blocks of two. The smaller one is 5.1 x 5.5 and the larger 5¼ x 7. They are made for high-speed work, and have steel pistons with exceptionally light alloy steel rods. The crankshaft is a racing style made rigid and carried on three large main bearings, with pressure oil feed for lubrication.

An American ball-bearing floating axle is used. These are special axles cut directly from the billet for the car. In fact, the entire machine is practically hand built and fitted throughout, and, although an assembled car in the final analysis, the parts are in most instances special and designed to meet the high stresses of fast driving. The frame is a product of the Hydraulic Pressed Steel Co., and the wheelbase is 114 in. on both the large and small models. Both sizes carry 33 x 4½ tires, and the prices are $3,500 for the larger car and $2,650 for the smaller.

Probably the most expensive car on the floor is the Fageol with the Kimball gray-green touring body. As it stands it is listed at $12,000. It has adjustable front seats which slide back and forth to suit the occupants. It is fitted with a Victoria top which is lined with silk plush. The outside of the top is mohair. The floor coverings are also of silk plush over the mahogany floorboards. The ventilators in the top of the hood are striking, and also tend to relieve the long line of the hood covering the Hall-Scott aviation engine housed within. The sales price of the engine alone, exclusive of the chassis, is $5,400.

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WHAT IS GASOLINE?

1—Easily Adulterated 3—Can't be Defined
2—Never Uniform 4—It Costs a Lot

That's What the Bureau of Standards Knows About It

WASHINGTON, D. C., Jan. 27—Watch your gasoline. This applies equally well to the dealer and garageman and to the car owner. For a conference of noted oil and gasoline men has discovered:

1—That gasoline is easily adulterated and the adulteration is hard to detect.

2—That the gravity of gasoline is no longer of any value as an indication of its usefulness, because a heavy fuel may easily be more volatile and, therefore, more desirable than a lighter fuel.

3—That there is no such thing as uniformity in the quality of gasoline sold in various parts of the country.

All of this was brought out after 12 hr. of continual discussion before the Bureau of Standards. Representatives of the oil industry from the most important to the smallest took part in the discussion, and the principal thought was to discover some way in which the average quality of gasoline sold throughout the country might be made more uniform.

There were engineers there to say, in scientific terms, what they thought gasoline ought to be; there were lawyers there to give evidence regarding the complaints entered by users of gasoline; and, last but not least, the oil men were there to tell what liquids could be commercially produced for sale and to make plain how hard it is for them to be sure that what they turn out as gasoline reaches the ultimate consumer in its original form.

It Is Easily "Mixed"

The big difficulty with gasoline is the large number of opportunities for adulteration which occur between the refining process and the time when the liquid goes into the tanks of the automobile. From the refiner the gasoline goes to the jobber, who buys from different sources and probably mixes different sorts by dumping different carloads in the same main tank. The jobber has the opportunity of adding to the gasoline something which he buys under a different name, such as kerosene or distillate. He may do this and yet produce a perfectly satisfactory fuel. There are gasolines on the market to be bought at the refineries which are actually improved by the addition of kerosene.

From the jobber the gas goes to the tank wagon, and a dishonest teamster has ample opportunity for adulterating the liquid it is his duty to deliver to the retailer. Six drivers in Detroit were recently caught making a fifty-fifty mixture of the jobber's gasoline and kerosene before delivering to the retailer. Finally, the retailer can again blend or mix just as the jobber can.

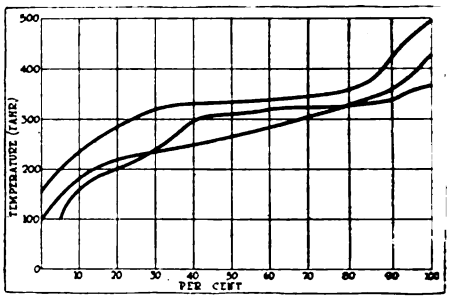
This May Cause Trouble

Here comes a very crucial point. If the refiner supplies Blue Moon gasoline, the jobber who handles this or the retailer or anyone else who adds anything to it is guilty of fraud if from refinery to private motorist the product is sold as Blue Moon gasoline all along the line. If, however, either jobber or retailer buys Blue Moon gasoline, mixes something with it, and sells it as Pink Sun gasoline, he is not guilty of any fraud whatsoever.

It was reported to the bureaus by many of the speakers that a regular habit among a certain class of dealer is to buy a proprietary brand of gasoline and sell it at the marked figure—say, 18 cents—under its own name. They will take some of this, debase it by kerosene additions, and sell it under some fancy name of their own at a cent or two a gallon more, and the motorists buy the dearer product under the impression that it must be better. This, of course, is plain dishonesty, yet it is a kind of dishonesty which a few laws exist to stop. That it must be stopped somehow or other is obvious.

Throughout the country, legislatures, both State and municipal, are drafting bills to regulate the sale of gasoline. In a number of districts there are already laws in existence. Nearly all these legislatures are appealing to Washington to give them a rational basis for a law which will protect motorists from fraud, which will insure that when a man buys gasoline he gets what he wants, even although he is incapable of describing in scientific detail just what it is that he does want.

The District of Columbia has suggested that a national law might be passed governing interstate commerce in some way defining gasoline, and that this law could be taken as a model by the States and the municipalities. At the Washington meeting practically all the oil companies, both large and small, were represented, and with but a single exception they all opposed any kind of legislation whatsoever. They opposed it for two reasons: (1) Because they believe it impossible to define the meaning of gasoline without increasing the price or restricting supply; (2) because laws mean inspectors, inspectors mean graft, graft means increased price or decreased profit.



Distillation curves typical of commercial gasolines showing the different proportions that would boil over at different temperatures. These three gasolines might give exactly the same results in service

The chief reason that a definition of gasoline is going to be almost impossible to make is that nobody, neither oil man nor automobile engineer, is at present able to say what gasoline ought or ought not to contain. There are just two things which are certain about it. Taking the engine of to-day, the fuel for it must contain some proportion of highly volatile spirit to allow it to be started. It must not contain more than a very small proportion of spirit with less than a certain degree of volatility. But practically nobody at the conference was able to place any definite mark on these limitations.

The Distillation Curve

In order to understand the situation it is necessary to appreciate the meaning of a distillation curve. In testing gasoline a small measured quantity is put in a flask and is boiled away, the vapor being condensed and led to a graduated measuring glass; in the neck of the flask is a thermometer. The accepted method is to observe the temperature at which successful proportions of the liquid have been boiled off. For example, the temperature may be read when 20 per cent has passed over into the condenser, again when 50 per cent is gone, and again at 90 per cent.

Finally, as the last drop in the flask vanishes, we reach the "dry point" or "end point," where the temperature again should be observed. The temperature when boiling first starts is known as the initial point. A pretty good gasoline in the ordinary sense of the term would be something as follows: 25 per cent boiling off before reaching temperature of 225 deg. Fahr., 50 per cent boiling off before reaching a temperature of 265 deg. Fahr., 90 per cent boiling off before reaching a temperature of 340 deg. Fahr.; dry point, 400.

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Tire Under-Inflation Makes Fuel Cost Soar

It May Increase Gasoline Consumption 25% Says Sheffield School Professor to Engineers

PHILADELPHIA, PA., Jan. 25—Under-inflation of tires can increase fuel consumption fully 25 per cent. This is the message given the Pennsylvania Section of the Society of Automotive Engineers by Prof. E. M. Lockwood, head of the Sheffield Scientific School of Yale University.

Furthermore, fully two-thirds of the total power lost between the engine and the road wheels is due entirely to flexure of the tires and may be considerably decreased by proper inflation.

Professor Lockwood gave these figures in a paper entitled "Power Losses in Pneumatic Tires" and the tests upon which he bases his conclusions were made in the laboratory on special apparatus consisting of rollers set in motion by a calibrated electric motor. The car was anchored with the front wheels and the rear wheels alternately resting on the rollers.

Professor Lockwood points out that the experiments have the limitation of being made on but one size of tire and adds that no claim is made that the entire question of tire resistance has been solved.

In summarizing the paper Professor Lockwood suggested that the present requirement is a tire which may be flexed indefinitely like a steel spring without generating internal friction and consequently heat. With such a tire, practically all rolling resistance would be eliminated.

Some of the results of the tests are given in the appended tables, the first of these showing the figures from a series of runs made with a light six-cylinder chassis and with a heavier six-cylinder chassis.

It should be noted in the accompanying table that the pressure in the cord tire was higher than that in the fabric tire and for this reason the test is perhaps no quite as fair as it might be.

RESISTANCE OF TIRES

	Pounds	Per cent
Front tires	18.2	31.2
Rear tires	17.7	30.3
Front bearings ...	4.7	8.0
Rear bearings*	17.9	30.5
	58.5	100.0

*Includes transmission mechanism up to neutral gear.

Subsequent tests, however, do show that the rolling resistance of the cord tire is considerably less than that of the fabric tire and furthermore that the rolling resistance of the cord tire does not increase nearly so rapidly with a reduction in inflation pressure as is the case with the fabric tire. This is well brought out by the set of curves given herewith.

From these, it will be seen that the fabric tire (A) inflated to 80 lbs. gave a rolling resistance of 30 lbs. and when the inflation pressure was reduced to 30 lbs., the rolling resistance immediately mounted to 46 lbs.—an increase of 50 per cent.

With the cord tire, on the other hand, the rolling resistance remains constant for pressures from 80 lbs. down to 55 lbs. and from here down to 30 lbs., the rolling resistance increases only 2½ lbs.

Similarly, the load carried by the tire has an important effect on the rolling resistance, for, the greater the load, the greater will be the flexure of the tire; and as Professor Lockwood, has pointed out, the more flexure there is, the greater the heat generated and as it requires power to generate heat, this power is lost because the heat is dissipated into the air and not converted into useful work.

Urges Higher Fees For Pennsylvania Dealers

Highway Department Would Raise Tax Fifty Per Cent Through Proposed Law

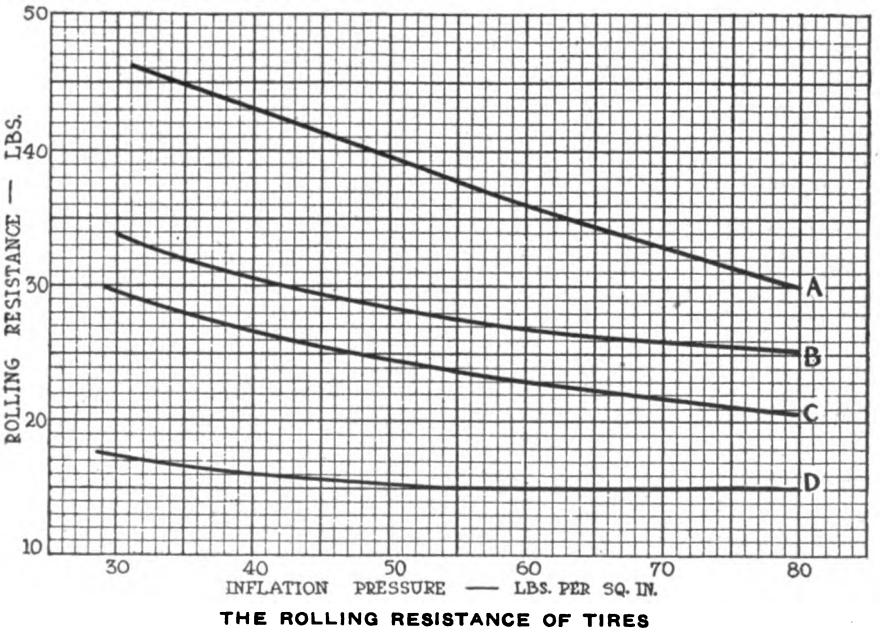
HARRISBURG, PA., Jan. 27—There will be a uniform regulation of automobiles throughout Pennsylvania, if the present amendments to the Act of 1913 now placed before the Legislature by the highway department are adopted. The new law would take away from the cities or boroughs the right to make local automobile ordinances. It would increase the dealer's fee from $10 to $15. Every operator must have a driver's license. No license is valid without the driver's photograph and signature attached. The horn-blow provision is eliminated in the proposed law, and the exceeding of 24 m.p.h. is to be prima-facie evidence of recklessness. The power of headlights is limited and light forbidden to rise above 42 in. from the surface on which the vehicle stands.

All information for offenses committed by automobile owners or users shall be brought under the act of assembly, and not before a magistrate or justice of the peace, as at present.

Where Lost Power Goes In a 2700-lb Chassis

	Inflation Pressure	Miles Per Hour 20	30	40	Average Resistance
32 x 4 Cord	60	11.7	11.7	13.8	12.4
32 x 4 Fabric	55	24.1	23.3	24.4	24.3
35 x 5* Cord	—	33.0	33.6	33.8	33.6

*Fitted to heavier car.



THE ROLLING RESISTANCE OF TIRES
A—Rear wheels fabric tire load on each wheel 772 lb.
B—Rear wheel fabric tire load on each wheel 550 lb.
C—Front wheel fabric tire load on each wheel 570 lb.
D—Front wheel cord tire load an each wheel 570 lb.

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Prominent Tradesmen Assume New Duties

Resignations and Promotions Place Workers in New Places

L. Z. McKee has been made manager of the Lafayette, Ind., branch house of the Gibson Co. He succeeds A. W. Voorkamp, who has been assigned to another department.

C. I. Hansen has been made purchasing agent for the Haynes Automobile Co., Kokomo, succeeding C. H. Landsettel. Hansen was formerly connected with the Mitchell-Lewis Co.

Fred R. Farmer has been appointed manager of sales of the wholesale accessories division of the Gibson Co., Indianapolis. He succeeds E. C. Kurman, who becomes manager of city sales in the automobile division.

Harold C. Vance has been appointed acting purchasing agent of the Studebaker Corp. to fill the place made vacant by the recent death of C. J. Reynolds. Vance has been connected with the Studebaker Corp. for many years.

W. B. Canis has been appointed treasurer and manager of the New Era Spring and Specialty Co., Detroit. He was formerly connected with Motor Age.

J. F. O'Brien has been made chief clerk of the automobile and accessory divisions of The Gibson Co., Indianapolis. He was formerly cashier of the company.

F. T. Chase, who recently left the Frank Mossberg Co., Attleboo, Mass., to enter the cycling field, has rejoined the Mossberg organization. His former work was in the sales department. In his renewed connection he has charge of advertising, export, research, promotion and special investigation.

L. G. Peed, manager of the Philadelphia branch of the Maxwell Motor Sales Corp., has resigned to join the staff of the Willys-Overland Co. in New York.

Orlando Weber, who recently resigned as director of the Maxwell Motor Co., Inc., has joined the banking firm of Eugene Meyer & Co., New York.

W. H. H. Hutton, Jr., has been made director of purchases for the Timken Axle Co.

C. E. Darland has been appointed general manager of the Tulsa Automobile Co., Tulsa, Okla. W. A. King has been made factory and production manager.

L. W. Enos, formerly connected with the Willard Storage Battery Co., has been appointed assistant sales manager of the Steel Products Co., Cleveland, and will handle the Michigan territory for the company.

Hugh C. Dunning, factory manager, and **Fred Corbeille,** assistant superintendent of the Chevrolet Motor Co., have resigned to accept positions with the Stephens Motor branch of the Moline Plow Co. at Freeport, Ill.

C. A. Bonniwell, who recently resigned as assistant sales and advertising manager of the Auburn Automobile Co., Auburn, Ind., has joined the H. Walton Heegstra Advertising Service. Chicago.

Harry R. Williams has been appointed sales engineer and manager of the Detroit office of Klaxon Co. He comes to them from the Chanslor & Lyon Co.

H. J. Newman has resigned as assistant sales manager of the Atterbury Motor Truck Co. and has taken a position with the sales department of the Garford Truck Co., Lima, Ohio.

S. W. Mills has joined the forces of the Highway Tractor Co., Indianapolis. He was formerly an engineer for the Fiat company.

O. O. Dice has joined the sales force of the Cuyler Lee organization of San Francisco as sales manager of the Maxwell branch of that company.

Alexander Winton was re-elected president of the Winton Motor Car Co., in company with all other officers, at the annual meeting of stockholders, which was held this week.

H. L. Innes has resigned from Dodge Brothers to become factory manager of the Chevrolet Motor Co., Flint.

S. A. Strickland has resigned as mechanical and sales engineer of the Bantam Anti-Friction Co., effective Feb. 1.

William Nantarro, formerly of J. M. Quinby & Co., Newark, N. J., has been appointed superintendent of the body building department of the Kent Motors Corp., Newark, N. J.

E. F. Roberts has been made factory manager of the Packard Motor Car Co., Detroit; he was formerly general superintendent, and in his new position will have charge of factory operation.

C. F. Tolizein has been made manager of production of the Packard Motor Car Co., Detroit. He was formerly purchasing manager.

Louis Logie has been made Canadian general sales manager for the Maxwell Motor Co. of Canada, Windsor, Ont.

Louis Livingstone has been made representative for the Eastern Canadian territory for the Maxwell Motor Co. of Canada, Windsor, Ont.

P. L. Emerson has been appointed general sales manager of the Olds Motor Works, Lansing, Mich. G. L. East has been made assistant sales manager.

W. T. Hathaway, formerly road man of the Willys-Overland Co. at Kansas City, has succeeded F. D. Phillips as wholesale sales manager.

F. N. G. Kranich has joined the engineering staff of the Hyatt Roller Bearing Co., Chicago, and will devote his entire attention to the implement and farm machinery end of the company's work. Under his direction there will be a special department devoted exclusively to the application of Hyatt bearings for all agricultural machinery other than tractors.

A. E. Morrison, for the last four years special representative of the Maxwell Motor Co., has resigned from that company to become Western sales manager for the Rainier Motor Corp., with headquarters in San Francisco.

Robert C. Enos, who is now advising president and general manager of the American Distributing Co., Detroit, has been appointed sales manager of the Torbensen Axle Co., Cleveland, and will assume his duties Feb. 1.

R. D. Northrop has resigned as advertising manager of the Standard Woven Fabric Co. and joined the staff of the Greenleaf Co. advertising agency, Boston.

W. R. Rood, vice-president of F. S. Carr & Co., Boston, has resigned and his new connection is not yet announced.

Orville Lawson of the Inter-State Motor Co., Muncie, Ind., has been transferred to the exporting branch of the factory, which has its offices in New York.

A. C. Faeh, former advertising manager for Baker R. & L. Co., Cleveland, will become sales and advertising manager for the Osgood Lens & Supply Co., Chicago, Feb. 1.

American Car Famine Hits British Isles

Less Than Two Hundred Unsold American Machines on Market—Importation Banned

NEW YORK, Jan. 29—There are not over 200 unsold American cars in the British Isles at present, according to Joseph A. Mackle, director of the Willys-Overland, Ltd., London, who for several years past has been an annual visitor at the New York shows. Mackle arrived too late for the New York event this year, but will attend the Chicago show.

Previous to the war there were approximately 400 dealers and garagemen in the country. Many of these dropped out of business soon after the war, and those remaining have been selling American cars and trucks. Since the importation of American cars has ceased many London dealers have been using their few lathes on sub-contracts for munition manufacture. London dealers have been doing a big business in buying and selling used cars.

When the complete prohibition order barring importation of passenger cars into England was enforced March 21, there was on hand a three months' normal supply of American motor cars. Due to government restrictions on gasoline, this three months' supply proved adequate for 10 months, otherwise the surplus would have been exhausted months ago.

At present gasoline is selling at 68 cents per Imperial gallon, and each private motorist is given 2 gal. of gasoline a week.

Beginning with Dec. 15 the government restricted the manufacturing of passenger automobiles in England by English makers. Previous to that time the Ford factory in Manchester and a few other manufacturers were producing passenger cars.

At present all of the automobile factories are under the direction of the Minister of Munitions, and for control purposes he has divided the entire industry into three broad divisions: A, manufacture of passenger cars; B, manufacture of commercial cars; C, automobile repair work. The manufacture of class A has been stopped. A warning order has been issued to proceed more slowly in the manufacture of commercial cars. A recent order limited the amount of any one repair job to $50. If the repair work on a passenger car exceeds this amount a special permit from the government must be obtained. This restriction has been imposed due to conservation of labor.

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Grange Night Popular at First Allentown Show

Lehigh Show Salesmen Greet Public in Rural Costume—50 Exhibitors—57 Makes of Cars

ALLENTOWN, PA., Jan. 29—The first annual show of the Lehigh Automobile Trade Association, which closed last Saturday night, exceeded the expectations of exhibitors and show managers alike, both in point of attendance and the number of prospects secured. It was estimated that the attendance was 12,000.

Allentown, familiarly known as the Queen City, is situated in the center of a rich agricultural district. The population of the city is 55,000, that of the county 125,000, many of whom are farmers. The class of people throughout Lehigh County is the most thrifty to be found anywhere. The farmers comprise about one-half of the automobile owners of the county.

Taking advantage of this fact the show management designated Tuesday night as Grange night. It was a typical event and one not easily forgotten. Everyone connected with the show, from the ticket-seller to the youngest salesman, was dressed in blue jean jumpers, overalls, red bandanna handkerchiefs and the familiar straw hat. Thursday night was Society night and Friday Ladies' night. The latter event was staged because Manager Peter Leisenring recognized the influence which women have in the selection and purchase of a car.

The show was held in the large Ritter and Yost garage on Chew Street. It was formally opened by George W. Hunsicker, president of the association, and one of the oldest men in the automobile business in Lehigh County. There were 50 exhibitors and 57 makes of cars on the floor.

Baughman Branch in Jacksonville, Fla.

TAMPA, FLA., Jan. 29—G. Norman Baughman Co. operating the American Supply Co., automobile supplies, has opened an exclusively wholesale branch in Jacksonville.

Schaeffer Is Seattle President

SEATTLE, Jan. 23—The Seattle Motor Car Dealers' Association held its annual meeting at the Arctic Club the past week and the following dealers were elected to handle the affairs of the organization for the coming year: President, A. G. Schaeffer, manager of the Winton Motor Car Co. branch for the Northwest; Vice-President, William L. Eaton; Secretary, J. A. Osmond, manager of the Mitchell Motor & Service Co.; Treasurer, M. S. Bringham, Cadillac and Scripps-Booth distributer.

Local Show Managers Form Association

E. E. Peake Heads New Body Representing 35 Local Shows Between Pittsburgh and Denver

CHICAGO, Jan. 30.—The National Automobile Show Managers Association was organized here to-day by representatives of 35 dealer-associations from central West territory. This brings to a culmination the suggestion first given by MOTOR WORLD prior to the New York show and worked out in part at a meeting of show managers held during the week of the show.

E. E. Peake, secretary and treasurer of the Kansas City Motor Car Dealers' Association, and manager of the Kansas City show, was elected president of the new association; Bart J. Ruddle, assistant secretary of the Milwaukee Automobile Dealers, Inc., was elected vice-president; Ray W. Sherman, of MOTOR WORLD, was elected secretry and treasurer.

At the meeting, which was held during the New York show, the advisability and the possibilities of an organization of show managers were threshed out, and it developed that a body of this kind has a great number of opportunities for working for the common good. A call was issued by MOTOR WORLD for a meeting to be held during the Chicago show and about thirty show managers accepted the invitation to attend.

The association was launched with an initial membership of these men representing local shows in the territory between Pittsburgh and Denver. Among those who attended were:

P. M. Lattner	Cedar Rapids
J. B. Crowley	Charleston, W. Va.
Fred Caley	Cleveland
G. F. Burmeister	Davenport
Dean Schooler	Des Moines
J. T. Peacha	Duluth
E. J. Filiatraut	Duluth
G. W. Tremain	Ft. Dodge
A. C. Heath	Ft. Dodge
G. B. Thurman	Frankfort, Ind.
J. B. Orman	Indianapolis
E. E. Peake	Kansas City
Bart J. Ruddle	Milwaukee
E. R. Carhart	Oklahoma City
W. W. Vesper	Oklahoma City
J. J. Bell	Pittsburgh
Robert E. Lee	St. Louis
Walter Wilmot	Minneapolis
Leslie R. Lumley	Champaign, Ill.
E. W. Johnson	Denver
J. A. Fleming	Sioux City
F. W. Griffith	Racine
Charles E. Myers	Racine

Lancaster Show Finds Farmers Heavy Buyers

Heavy Tobacco Crops Lead to Many Sales of Cars Under $800—Rich Agricultural Region

LANCASTER, PA., Jan. 29—Catering to the richest agricultural district in America the Lancaster Automobile Trade Association held its annual show in the Western Market House Jan. 23-27. Many sales were reported and the event was the most successful of any ever held by the association. Between 15,000 and 20,000 persons from this city and towns throughout Lancaster county saw the 31 makes of cars on exhibition. There were 40 exhibitors.

Lancaster county is known for the wealth of its agriculture. At the present time the valuation of farm property is variously estimated at $85,000,000, which if equitably distributed among the population would give every man, woman and child the sum of $500.

The tobacco crop is the largest in the county and is larger than all the other counties in the State put together. This crop heads all others in size and valuation and gives this city the distinction of being the largest tobacco mart north of the Ohio River. The value of the crop is approximately $4,000,000 yearly. Live stock products are about the same in value.

The Market House was crowded on each day of the show, not merely with curiosity seekers, but people interested in buying automobiles. Cars within the $800 limit have struck a popular chord in the rural districts particularly, and the prospects at the show were numerous for such cars as the Ford, Maxwell and Overland. B. Franklin, Cadillac dealer, is president of the association.

Six More Refineries in Texas

AUSTIN, TEX., Jan. 29—Six gasoline refineries ranging in capacity from 10,000 to 60,000 barrels are now either in process of construction or are being planned for the near future.

263,049 Ohio Cars in 1916

COLUMBUS, Jan. 29—A total of 263,049 cars were licensed in Ohio during 1916. This is the largest number in the history of the State department, and if the ratio of increase is maintained there will probably be 300,000 cars in the State by the end of the present year. A total of 255,428 gasoline cars were registered, 4460 electrics and 2981 dealers and manufacturers.

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Dealers Seek Hearing On Service Warranty

Iowa Association Would Put Views of Retail Men Before N. A. C. C. —Meet at Fort Dodge

FORT DODGE, Jan. 29—A number of resolutions protecting their business interests and aiming for higher standards in the trade were passed by the Iowa Retail Dealers' Association at its convention here recently. The society went on record in favor of the Stephens bill. It also requested a hearing before the service committee of the National Automobile Chamber of Commerce in order that the dealers' opinions be represented in the standard service warranty.

The Iowa society urged upon the attention of the National Association of Automobile Accessory Jobbers that all jobbers' catalogs be issued in sizes to conform with sizes of approved and standard office filing devices, that articles listed therein be advertised at the manufacturer's list price, that a uniform index for jobbers' catalogs be adopted, and that all jobbers' catalogs be accompanied by a discount sheet.

Jacob Friedman, Dyersville, was reelected president. The other officers chosen for the ensuing year are: Vice-president, O. R. MacDonald, Des Moines; treasurer, J. D. Miles, Newton; directors, Frank Anderson, Keokuk; R. E. Beebe, Davenport; Mr. Rebass, Guthrie; Mr. Case, Charles City; B. M. Lattner, Cedar Rapids; T. O. Hart, Des Moines; B. Burt, Fort Dodge; J. E. Doze, Humiston; Mr. Sweeney, Carroll; Mr. Dickenson, Algona, and Mr. Mandel, Iowa City.

The society passed a vote of thanks to Motor World for its persistent campaign for better business methods in the trade. It commended the N. A. A. A. J. for the spirit of co-operation shown to local organizations. R. E. Beebe, of Davenport, led the discussion in the afternoon on the standard service warranty referred to in the resolutions, and J. C. Thorpe talked on the National Automobile Trade Association. Davenport was selected as the next convention city. The date will be determined by the board of directors.

County Units for Alabama

BIRMINGHAM, ALA., Jan. 28—The Alabama Automobile Dealers' Association met last Monday and Tuesday, and after planning to extend the membership by the formation of county units adjourned until March 9, at which time the Birmingham Automobile Show will be in session. The following officers were elected: President, Ralph J. Barr, Troy, Ala.; first vice-president, L. G. Adams, Mobile; second vice-president, W. B. Smith, Birmingham; secretary, T. R. Fields, Troy; treasurer, L. J. Pake, Montgomery. Directors—J. C. Salter, Montgomery; J. A. Robinson, Mobile; J. C. Wheeler, Anniston; H. A. Drennen, Birmingham. More than 40 dealers attended the banquet on Monday night.

Before the week ended word came from Director Wheeler, of Anniston, that he had called a meeting of Calhoun County dealers, and that he expected to organize a unit in that county of more than 100 members. He hopes to capture the next semi-annual State dealers' meeting.

CALIFORNIA DEALERS WIN

LOS ANGELES, Jan. 29—Dealers of California have won out in their contention against the State motor vehicle department, which refused more than 200 of them licenses for 1917 because of alleged failure to report sales during 1916. After suit had been entered by one distributer the superintendent of the motor vehicle department showed a willingness to listen to reason, as explained by the dealers, and upon his agreement not to abide by his original decision the suit was ordered dismissed and dealers are to get their licenses as applied for.

Canada Spends Millions for Cars

MONTREAL, CANADA, Jan. 29—Two hundred million dollars is invested in the automobile industry in Canada, and still the manufacturing of cars is in its infancy. Eighteen thousand cars are in use in the Province of Quebec alone, and many leading firms are using motor trucks.

American and Canadian manufacturers have little or no competition at the present time, due to the war. The market likely will be flooded with French and British cars, not high priced cars, but models of moderate prices. Even now a manufacturer of cars in England and France is figuring on producing a low-priced car to compete with American-made cars. He has his plans all laid, and the moment the big machines stop work by order of the government the work of producing automobiles for his own country and for the United States and Canada will begin.

Canadian Saxon Cars Sell Well

The Saxon-Maheu Co., Montreal, has just completed its first business year, which has been highly successful. Over 100 cars have been sold in the Province of Quebec.

Singer Has Lynite Pistons

NEW YORK, Jan. 29—The Singer Motor Co. is equipping its motors with Lynite pistons. In a previous issue it was stated that these are Magnalite, but this was incorrect.

Chicago Now Adopting Multiple-Dealer Basis

Buick, Olds, Chandler, Ford and Hudson Subdivide Territory—Show Starts Business Early

CHICAGO, Jan. 29—The Chicago show has made a beginning which indicates that it will uphold its reputation of being the big business show of the year. Business was transacted to-day and inquiries by dealers are brisk. Quite a few contracts are being closed with dealers, thus far mostly from smaller cities not far away, but to-morrow the bigger dealers and those from more distant cities arrive.

The brisk condition has heartened exhibitors. For example, 2 hr. before the show opened Olds closed with a dealer in Rockford, Iowa. An hour after the show opened a special exhibit car was sold for list plus freight plus $100 extra, and since then contracts have been closed with dealers in Mattoon, Hinkley, DeKalb and Batavia, Ill. Prior to the show Manager Barton visited forty-three Chicago garagemen and service stations, stating the company would appoint ten city dealers, and as a result these Chicago men are thronging the show.

The readjustment of Chicago on a multiple-dealer basis seems to be a trend. Buicks have been handled for 3 years by seven dealers, and now Olds plans a similar arrangement. Tom Hay Chandler has 137 dealers in Cook County and is dividing it into ten zones, with a salesman in charge of each zone on commission.

Hudson has a dealer system also, and Ford but recently adopted the plan. This brings business to the show in great volume.

Dealers who visit the show have but one request—more cars. Farmers in northern Illinois have been buying this winter to some extent, and there is said now to be a tendency not to trade-in the old or small car but to keep it for a work vehicle and a buy a new one for carriage work. The tendency toward better dealers is also found in the comments on several exhibits. Dealers who decline to advance with the times are being weeded out, a fact which Motor World has emphasized many times in the past. One organization with more than 2000 dealers is getting rid of 960 poor merchandisers and profitless price-cutters.

Special trains are coming from several points. A party arrived to-day from San Antonio, Tex., and others are coming from other Southwestern points. An Oklahoma delegation of 150 banqueted in the Auditorium to-night. F. E. Tucker, New York Stromberg manager, has joined F. E. Wing, Boston, Marmon dealer.

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Goodrich Net Profits Close to $9,550,000

Directors Declare 3½ Quarterly Dividend on Preferred Stock—May Retire 9000 Shares

NEW YORK, Jan. 25—Net profits of approximately $9,550,000 were made by the B. F. Goodrich Co. in 1916. The surplus was close to $5,500,000. The net earnings for 1916 were less than those of 1915, which is largely due to the fact that advances in selling prices have not kept pace with rapidly increasing costs.

This amount added to the surplus carried over at Dec. 31, 1915, of $10,580,000 shows undivided profits of approximately $14,900,000. At the regular quarterly meeting of the directors on Jan. 24 a dividend of 3½ per cent was declared on the preferred, payable 1¾ per cent April 2 and 1¾ per cent July 2. A quarterly dividend of 1 per cent was declared on the common, payable May 15.

The directors voted, subject to the approval of the stockholders at their annual meeting March 14, to retire 9000 shares of preferred prior to July 1, 1917. This makes a total retirement of 36,000 shares covering charter provision for retirement of preferred up to July 1, 1917.

United Motors Buys Radiator Shutter

DETROIT, Jan. 24—The United Motors Co. has made a provisional purchase of the shutter patents held by the Detroit Motor Appliance Co., and which is now used by the Harrison Mfg. Co. in its manufacture of radiators for Hudson and Columbia cars. The United Motors Co. is investigating the validity of the patents. The Detroit Motor Appliance Co. is retaining the right to make these shutters for Ford cars.

New York Branch for Garford Truck

NEW YORK, Jan. 29—The Garford Motor Truck Co., Lima, Ohio, has reorganized its eastern distribution system. The New York office is now a factory branch, under the management of Rodney Hallam. Brooklyn, Newark, eastern New York, northern New Jersey and New England sales will also be handled from New York. C. B. Harvey returns from Philadelphia to take charge of the sales organization. The R. E. Taylor Corp., formerly handling the Garford trucks in this territory, is now distributer for the Gramm-Bernstein trucks in the East. The company will control sales on the Atlantic coast from Maine to Maryland.

Ajax Profits Top $548,000

NEW YORK, Jan. 29—The Ajax Rubber Co., in its report to the New York Stock Exchange, shows a gross income from Aug. 31 to Dec. 31, 1916, of $7,518,434, and net profits of $548,123. Profit and loss surplus amounted to $139,247.

Rainier Installed in Flushing Plant.

NEW YORK, Jan. 29—The factory of the Rainier Motor Corp., at the foot of Bayside Avenue, Flushing, New York City, has been completed and is in operation, shipping at present ten trucks per day. On Jan. 20, the executive and sales departments were removed from the New York show rooms to the offices in the factory building and the New York branch is now occupied solely as a retail store for the metropolitan district.

Parker Again Heads Parker Rust Proof

DETROIT, Jan. 27—Clark W. Parker was re-elected president of the Parker Rust Proof Co. of America and Wyman C. Parker was re-elected secretary-treasurer and general manager at the annual meeting of stockholders of the company this week. The report of the president showed that the company had made a profit on the direct business which had passed through the factory. Large contracts recently closed were not included in the assets. J. G. Johnson was elected vice-president, E. C. Hoelzle, assistant treasurer; W. M. Cornelius, assistant secretary and L. Hulbert, comptroller. Directors elected include H. A. Haigh, capitalist; L. G. Younglove, attorney; W. C. Parker, C. W. Parker, F. A. Richmond, merchant; G. D. Mason, architect, and J. G. Johnson, general manager of the American Car & Foundry Co.

Macon Takes Over All-Steel

MACON, MO., Jan. 25—The Macon Motor Car Co. has been organized to take over the business and assets of the All-Steel Motor Car Co., which was recently dissolved by order of the court. The new company is capitalized at $600,000, one-half of which is fully paid up. Judge N. M. Shelton has been appointed as trustee, to receive the stock of the old company and issue stock in the new one in lieu thereof. The old stockholders will not only receive the full amount of stock owned by them, but new stock in Macon company, to the amount of $85,000 will be distributed among them pro-rata, in addition thereto. The personnel of the board has not been determined.

Braender Boosts Prices 10 to 20 Per Cent

RUTHERFORD, N. J., Jan. 25—The Braender Rubber & Tire Co. has advanced its prices 10 to 20 per cent on its tires and tubes. These new prices are effective in all states except the Rocky Mountain states, where they are 5 per cent more. The 28 x 3 plain tread, formerly $9.80, is $11.25; non-skid, formerly $11.25 is 12.95, and the red tube which was $2.90 is $3.60. The 32 x 3 plain tread has been advanced from $15.35 to $17.40; the non-skid from $17.65 to $20, and the red tube from $3.60 to $4.60. The 36 x 4½ plain tread is now $35.40 instead of $31.45; the non-skid type $40.70 as compared with $36.15, and the red tube is $8.30 as against $6.70.

Charter Oak Moves to New Britain

HARTFORD, CONN., Jan. 28—The recently organized Eastern Motors, Inc., has removed its executive offices to New Britain, where active operations are now under way in the former trade school building. Under the supervision of Fred A. Law, vice-president of the company and engineering executive, the first models are being made ready for the road. An effort was made to have the cars ready for the Hartford show, Feb. 10.

Elect Brown President of Brown-Lipe Gear Co.

Chapin Retires as General Manager—Parsons, Company's Patent Attorney, Succeeds Him

SYRACUSE, Jan. 27—At the annual meeting of the Brown-Lipe Gear Co. the following officers and directors were elected: President, Alex. T. Brown; first vice-president, Willard C. Lipe; second vice-president, George W. Sponable; secretary and general manager, Arthur E. Parsons, and treasurer, E. H. Hungerford. These men with H. W. Chapin compose the board of directors.

Owing to the great increase in the business of the Brown-Lipe Gear Co. and the Brown-Lipe-Chapin Co. Mr. Chapin has retired from the general management of the former concern so as to devote his entire attention to the general management of the Brown-Lipe-Chapin Co. He retains his financial interest in the Brown-Lipe Gear Co. and a place on the board of directors. Arthur E. Parsons, the new general manager of the Brown-Lipe Gear Co., has been patent attorney for both companies since their organization. Although he will devote his entire time to the management of the Brown-Lipe Gear Co., he will retain his interest in the firm of Parsons & Bodell, patent attorneys, Syracuse, of which he is senior partner.

National Acme Holds Meeting

CLEVELAND, Jan. 27—Stockholders of the National Acme Co. declared a quarterly dividend of 1½ per cent, payable March 1, at their annual meeting held Jan. 24, besides electing new directors and planning several additional buildings. Seven new directors, including S. C. Eaton, A. H. Wiggins, president of the Chase National Bank of New York; G. L. Stone, of Hayden, Stone & Co., of Boston; H. L. Dillon, W. F. McGuire, A. W. Hopkins and W. R. Mitchell, members of the active staff of the company, were added. Officers elected were: W. B. D. Alexander, president; E. C. Henn, vice-president and general manager; A. W. Henn, secretary and treasurer.

Baum Heads Empire Tire

TRENTON, N. J., Jan. 28—A reorganization of the Empire Rubber & Tire Co. has been effected to increase the business and working capital. J. E. Baum, president of the Supplee-Biddle Hardware Co., has been elected president, succeeding C. Edward Murray. The new company will have preferred stock of $1,500,000 and $3,000,000 of common. Murray retains a substantial interest and remains a member of the board of directors, while one son, C. Edward Murray, Jr., is a vice-president, and his other son, J. Cornell Murray, is treasurer.

Now Woodworth Mfg. Co.

NIAGARA FALLS, Jan. 28—Woodworth Mfg. Co. is the new name of the Leather Tire Goods Co., which has been taken over in its entirety by this new company.

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Specifications of the Leading Cars

MOTOR WORLD GUIDE

Revisions Are Made in Table Every Week

Model	Motor	S. A. E.	Ignition	Carburetor	Starter	Clutch	Gearset	Wheelbase	Tires	Rims	2-Passenger	5-Passenger	7-Passenger	Coupe	Sedan	Limousine	Detachable Top
ABBOTT																	
6-44	6-3½x4½	25.3	Remy	Stmbg	Remy	DP	3	122	32x4	SS	1195	†1250	1195	1495	1820	....	....
ALLEN																	
Classic	4-3⅜x5	22.5	Wsths	Stmbg	Wsths	C	3	112	32x3½	SS	850	850	†850	1175	....	....	1195
AMERICAN-SIX																	
A	6-3 x5	21.6	G & D	Zenith	G & D	D	3	122	32x4	SS	....	1285	....	....	....	....	....
AMS-STERLING																	
17	4-3½x4½	15.6	Bosch	Stmbg	Bosch	DP	3	110	30x3½	SS	....	....	....	....	....	....	....
ANDERSON																	
Six-40	6-3½x4½	25.4	Wsths	Own	Wsths	DP	3	120	33x4	SS	1275	1250	*1250	....	....	....	....
APPERSON																	
6-17	6-3½x5	29.4	Remy	Rafid	Bijur	DP	3	130	34x4	SS	1750	....	1750	....	....	....	....
8-17	8-3½x5	31.2	Remy	Rafid	Bijur	DP	3	130	35x4½	SS	2000	....	2000	....	....	....	....
ARBENZ																	
	4-3½x5	16.9	Conn	Carter	Disco	C	3	108	30x3½	C	....	675	....	....	....	....	....
AUBURN																	
6-39	6-3½x5	23.4	Remy	Rafid	Remy	DP	3	120	34x4	SS	1145	1145	†1145	....	....	....	1320
6-44	6-3½x5½	29.4	Delco	Rafid	Delco	DP	3	131	35x4½	SS	....	†1535	1535	....	....	....	1785
AUSTIN																	
Hy-King	2-2½x5	39.7	Delco	Stmbg	Delco	D	6	142½	34x4½	SS	3750	3750	3750	4550	4950	5250	....
BIDDLE																	
D	4-3½x5½	22.5	Dixie	Zenith	G & D	DP	4	122	32x4	QD	2200	2350	†2275	....	....	3800	3900
BOUR-DAVIS																	
17	6-3½x4½	25.3	G & D	Stmbg	G & D	DP	3	118	32x4	QD	....	1250	....	....	....	....	....
BREWSTER																	
	4-4x5½	25.6	Bosch	Zenith	U. S. L.	C	3	125	34x4½	SS	†6500	....	....	....	7500	7700	....
BRISCOE																	
B4-24	4-3 1/16x5½	16.3	Conn	Mayer	Splitdorf	C	3	105	30x3½	QD	685	685	†685	....	....	....	....
8-38	8-3 x3½	28.8	Remy	Zenith	Apico	C	3	114	32x3½	QD	‡985	985	....	....	....	....	....
4-38	4-3 1/16x5½	18.9	Remy	Mayer	Apico	C	3	114	32x3½	QD	‡785	785	....	....	....	....	....
BRUNSWICK																	
	4-4½x5½	36.1	Bosch	Rafid	Wsths	..	3	....	....	....	....	....	1950	....	....	....	....
BUICK																	
D 4-34																	
35	4-3⅜x4½	18.2	Delco	Marvel	Delco	C	3	106	31x4	C	660	675	....	....	....	....	....
6-44																	
47	6-3½x4½	25.3	Delco	Marvel	Delco	C	3	115	34x4	SS	1040	1070	‡1440	....	1835	....	....
E-49	6-3½x4½	27.3	Delco	Marvel	Delco	DD	3	124	34x4½	SS	....	....	1385	....	....	....	....
CADILLAC																	
55	8-3½x5½	31.2	Delco	Own	Delco	D	3	132 125	36x4½	SS	†2240	2240	2240	2960	....	3760	2835
CASE																	
T-17	4-3⅜x6	21.0	Conn	Rafid	A-Lite	C	3	120	34x4	QD	†1190	....	1190	....	....	....	....
CHALMERS																	
6-30	6-3½x4½	25.4	Remy	Stmbg	Wsths	DP	3	115 122	32x4	SS	1230	1250	1350	1440	1850	2550	....
CHANDLER																	
17	6-3⅜x5	27.3	Bosch	Rafid	G & D	D	3	123	34x4	SS	†1395	....	1395	1995	1995	2695	1995
CHEVROLET																	
4-90	4-3 1/16x4	21.7	Conn	Zenith	A-Lite	C	3	102	30x3½	C	550	550	....	....	....	....	....
F5-F2	4-3 1/16x4	21.7	Conn	Zenith	A-Lite	C	3	112	32x3½	SS	800	800	....	....	....	....	....
D	8-3½x4	36.45	Conn	....	A-Lite	C	3	120	34x4	SS	1385	....	....	....	....	....	....
COLE																	
8-60	8-3½x4½	39.2	Delco	Stmbg	Delco	C	3	127	35x4½	SS	†1695	....	1695	....	2295	2295	2195
CROW-ELKHART																	
CE-35	4-3½x5	19.6	Conn	Zenith	Dyneto	DP	3	114	32x3½	SS	†825	795	....	....	....	....	935
DANIELS																	
8	8-3½x5	33.8	Wsths	Zenith	Wsths	D	3	127	34x4½	QDR	†2600	....	2800	....	....	4000	....
DAVIS																	
H & I	6-3½x4½	25.3	Delco	Stmbg	Delco	C	3	119	34x4	....	1195	1195	1195	1595	1795	....	1995
J	6-3½x5½	29.4	Delco	Stmbg	Delco	C	3	124	34x4½	....	....	1495	1495	....	....	....	....
DETROITER																	
6-45	6-3½x4½	25.3	Conn	Ball	A-Lite	D	3	119	33x4	SS	‡1195	1195	....	1373	....	....	1398
F	4-3½x4½	22.5	Dixie	Schebler	Dyneto	D	3	112	32x4	SS	....	985	....	....	....	....	....
DISPATCH																	
G	4-3½x5	22.5	Bosch	Rafid	U.S.L.	D	4	120	36x3½	....	1135	1210	....	1400	....	....	....
DIXIE FLYER																	
1917	4-3½x5	16.9	Conn	Carter	Dyneto	C	3	112	32x3½	SS	†795	795	....	....	....	....	....
DODGE BROTHERS																	
	4-3½x4½	24	Delco	Stewart	N.E.	D	3	114	32x3½	S	785	785	....	950	1185	....	950
DORRIS																	
1-B-6	6-4 x5	38.4	Bosch	Stmbg	Wsths	D	3	128	36x4½	SS	....	....	2475	3250	3350	3675	
DORT																	

Model	Motor	S. A. E.	Ignition	Carburetor	Starter	Clutch	Gearset	Wheelbase	Tires	Rims	2-Passenger	5-Passenger	7-Passenger	Coupe	Sedan	Limousine	Detachable Top
LOCOMOBILE																	
R-7	6-4½x5	43.3	Eismn	Ball	Wsths	DD	4	139	37x5	QDC	†4750	*4600	4600	....	....	5600	....
M-7	6-4½x5½	48.6	Eismn	Own	Wsths	DD	4	142	37x5	QDC	*5400	....	5400	....	....	6500	....
LOZIER																	
84	4-4½x6½	28.9	Bosch	Stewart	G & D	D	4	120	36x4½	SS	....	....	1695	....	....	....	....
82	6-3½x6	36.0	Eismn	Rafid	G & D	D	3	132	36x4½	SS	....	....	2775	....	....	....	....
LUVERNE																	
17	6-3½x5	33.7	Bosch	Schebler	Bosch	DD		132	35x4½	SS	....	....	1500	....	....	....	....
MADISON																	
4	6-3½x5	23.4	Remy	Rafid	Remy	DD	3	120	34x4	SS	....	....	....	....	....	....	....
	6-3½x5	23.4	Remy	Rafid	Remy	DD	3	115	34x4	SS	1050–1150		....	....	....	....	....
	6-3½x5	23.4	Remy	Rafid	Remy	DD	3	124	34x4	SS	†1150	(1150) 1250	1150– 1250	....	....	....	....
MAIBOHM																	
A	4-3½x4	15.6	A.Kent	Zenith	Disco	DD	3	105	30x3½	SS	695	....	....	....	....	....	....
MAJESTIC																	
M	8-3 x5	28.8	A.Kent	....	R & M	DP	3	125	32x4	....	†1500	1650	1650	....	....	....	....
A	8-3½x5	33.8	A.Kent	....	R & M	DP	3	135	35x5	....	†3000	3000	3000	....	....	....	....
MARION HANDLEY																	
6-40	6-3½x5	23.4	Wsths	Stmbg	Wsths	DD	3	120	32x4	SS	†1275	....	1275	....	....	....	....
6-60	6-3½x5½	29.4	Wsths	Stmbg	Wsths	DD	3	125	35x4½	SS	....	....	1475	....	....	....	....
MARMON																	
34	6-3½x5½	33.7	Bosch	Stmbg	Bosch	C	3	136	34x4½	QD	††3100	3050	3100	....	4100	4500	....
MAXWELL																	
25	4-3½x4½	21	Sims	K-D	A.Kent	C	3	103	30x3½	C	620	635	....	865	985	....	....
McFARLAN																	
	6-4½x6	48.6	Bosch	Stmbg	Wsths	DP	3	136	35x5	QDR	3750	3800	3500	....	....	....	....
MERCER																	
22-73	4-3½x6½	22.5	Bosch	Corser	U.S.L.	DD	4	132	34x4½	QDC	†3500	*3500	..	....	....	....	....
22-73	4-3½x6½	22.5	Bosch	Corser	U.S.L.	DD	4	115	32x4	QDC	3400	Raceabout, 3250	..	....	....	....	....
METZ																	
25	4-3½x4	24	Dixie	A.W.T.	G & D	F		108	32x3½	C	545	545	....	....	....	....	....
MITCHELL																	
D-40	6-3½x5	25.4	Conn	Rafid	Splitdorf	C	3	120	32x4	SS	1050	1050	....	....	....	....	....
C-42	6-3½x5	29.4	Conn	Rafid	Wsths	C	3	127	34x4	SS	‡1325	1325	1360	1850	1985	2650	....
MOLINE-KNIGHT																	
C	4-3½x5	22.5	Conn	Schebler	A-Lite	C	3	118	34x4	SS	†1450	1450	....	....	....	....	....
G	4-4 x6	25.6	Conn	Schebler	A-Lite	C	3	122	35x4½	SS	†1750	....	1840	2400	2350	....	....
MONARCH																	
	8-3 x5	28.8	A.Kent	Zenith	....	D	3	125	35x4½	....	....	1500	....	....	....	....	....
MONITOR																	
C-R	4-4½x4½	22.5	Heinse	Schebler	Heinse	D	3	108	32x3½	SS	795	795	....	....	....	....	....
N-O	6-3½x4½	25.4	Heinse	Stmbg	Heinse	D	3	115	33x4	SS	995	995	....	....	....	....	....
MONROE																	
M-3	4-3 x4½	14.4	Conn	Zenith	A-Lite	DD	3	96	30x3	DC	565	....	....	....	965	....	....
M-4	4-3½x4½	16.9	Conn	Zenith	A-Lite	DD	3	115	32x4	DC	....	985	....	....	....	....	....
MOON																	
6-43	6-3½x4½	25.3	Delco	Rafid	Delco	DD	3	118	32x4	SS	‡1295	1295	....	....	....	....	1450
6-66	6-3½x5½	29.4	Delco	Rafid	Delco	DD	3	125	35x4½	SS	†1690	....	1690	1690	2350	....	....
MURRAY																	
70-T	8-3½x5	33.8	Dixie	Zenith	Wsths	DP	3	128	34x4½	..	2500	....	2500	....	....	Chassis	2000
NATIONAL																	
Hgy	6-3½x5½	29.4	Dixie	Rafid	Wsths	C	3	128	34x4½	QDR	†1750	....	1750	2400	2350	....	....
Hgy	12-2½x4½	39.68	Delco	Rafid	Bijur	C	3	128	34x4½	QDR	†2150	....	2150	2800	2750	....	....
NELSON																	
	4-3½x4½	15.6	Bosch	Zenith	U.S.L.	D	3	104	32x4	SS	....	....	....	....	2200	....	....
OAKLAND																	995
34	6-2½x4½	18.9	Delco	Marvel	Delco	C	3	112	32x4	SS	‡ 875	875	....	....	....	....	1020
50	8-3½x4½	39.2	Delco	Stmbg	Delco	C	3	127	34x4½	SS	....	....	1585	....	....	....	....
OLDSMOBILE																	
45	8-2½x4½	26.4	Delco	Johnson	Delco	C	3	120	33x4	SS	1295	1295	....	....	1850	....	1775
46	6-2½x4½	19.8	Delco	Johnson	Delco	C	3	112	32x4	SS	†1095	1095	....	....	....	....	....
OVERLAND																	
85-4	4-4½x4½	27.2	Conn	Tltsn	A-Lite	C	3	112	32x4	SS	835	850	....	1250	1450	....	....
85-6	6-3½x4½	25.3	Conn	Tltsn	A-Lite	C	3	116	32x4	SS	970	985	....	1385	1585	....	....
OWEN																	
M-25	6-3½x5½	29.4	Bosch	Zenith	O-M	OM	..	125	34x4½	SS	....	3300	....	3650	....	4350	....
O-36	6-3½x5½	33.7	Bosch	Zenith	O-M	OM	..	136	35x5	SS	‡3950	†3950	3950	....	....	5000	....
PACKARD																	
2-35																	
2-25	12-3 x5	43.2	Bijur	Own	Bijur	DD	3	135 136	35x5	QDC	3050	3050	3050	4150		4450	
PAIGE																	
2-35																	

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R-30-35	4-3½x5	19.6	Bosch	Stmbg	Bijur	D	3	118	34x4	....	†1485	....	1845	....	....	....	....
	4-3½x5	19.6	Bosch	Stmbg	Bijur												
ELCAR																	
D.F.	4-3½x5	19.6	Delco	Carter	Dyneto	DP	3	115	32x3½	SS	845	845	†845	....	....	....	....
ELGIN																	
	6-3 x4½	21.6	Remy	Stmbg	Wagner	DP	3	116	33x4	....	†985	985	....	....	....	....	....
EMERSON																	
Four	4-3½x4	22.5	A.Kent	Kngstn	....	D	3	110	30x3½	C	....	395	....	....	....	....	....
EMPIRE																	
45	4-3½x5	24.0	A-Lite	Stmbg	A-Lite	C	3	116	33x4	SS	....	960	....	....	....	....	....
60-R	6-3½x4½	25.6	Conn	Stmbg	A-Lite	C	3	120	34x4	SS	†1145	....	....	....	1625	....	....
70	6-3½x4½	25.6	Conn	Stmbg	A-Lite	DP	3	120	34x4	SS	....	1235	....	....	....	....	....
ENGER																	
12	12-2½x3½	34.2	Wsths	Stmbg	Wsths	DP	3	116	32x4	SS	....	1295	....	....	....	....	....
4	4-3½x4½	21.7	A-Kent	....	....	C	3	106	32x3½	....	....	695	....	....	....	....	....
FIAT																	....
55	4-5½x6½	42	Wsths	Zenith	Wsths	D	4	140	35x5	QDC	....	....	5500	....	....	6500	
56‡	6-4½x6	46.6	Bosch	Own	Own	D	4	135	37x5	QDC	‡5350	5350	5350	....	....	....	....
FORD																	
T	4-3½x4	22.5	Own	(Holly (Kngstn	....	D	2	100	30x3½	C	345	360	....	505	645	....	....
FOSTORIA																	
	4-3 x4½	14.4	Remy	Zenith	....	D	3	108	30x3½	C	....	695	....	....	....	....	....
FRANKLIN																	
9	6-3½x4	25.3	A.Kent	Own	Dyneto	D	3	115	32x4	SS	1800	1850	†1850	2650	2750	3000	....
F.R.P.																	
45-A	4-4½x6½	33.8	Bosch	Lngmre	Bosch	C	4	110	36x5r	C	7000	....	....	....	....	....	....
45-B	4-4½x6½	33.8	Bosch	Lngmre	Bosch	C	4	140	36x5r	SS	Chassis	7000	....	....	....	....	....
GLIDE																	
6-40	6-3½x5	23.4	Wsths	Rafld	Wsths	D	3	119	34x4	SS	....	1250	....	....	1325	....	....
GRANT																	
K	6-3 x4½	21.6	Remy	Stmbg	Wagner	C	3	112	32x3½	....	‡825	825	....	1050	1000	....	....
HACKETT																	
Four	4-3½x4½	22.5	Conn	Carter	Dyneto	D	3	112	32x3½	SS	†888	888	....	....	....	....	....
H. A. L.																	
	12-2½x5	39.6	....	Stmbg	Wsths	DP	3	135	34x4½	SS	2600	†2600	2600	....	....	4500	3500
HALLADAY																	
S	6-3 x5	21.6	A-Lite	Stmbg	Wsths	D	3	118	33x4	SS	‡1185	1150	....	....	....	....	....
R	6-3½x5	22.0	Wsths	Stmbg	Wsths	D	3	122	34x4	SS	1385	1385	....	....	....	....	....
HARVARD																	
4-2T	4-3 x4½	14.4	....	Zenith	Wagner	C	3	100	28x3	QD	750	....	....	....	....	....	....
HAYNES																	
36	6-3½x5	29.4	Remy	Rafld	L-N	DP	3	121	34x4	SS	....	1595	....	....	2260	....	....
37	6-3½x5	29.4	Remy	Rafld	L-N	DP	3	127	35x4½	SS	†1725	....	1725	....	2390	....	....
40	12-2½x5	36.3	Delco	Rafld	L-N	DP	3	121	34x4½	SS	....	2095	....	....	2760	....	....
41	12-2½x5	36.3	Delco	Rafld	L-N	DP	3	127	34x4½	SS	†2225	....	2225	....	2890	....	....
HOLLIER																	
186	6-3 x4½	21.6	Remy	Stewart	A-C	C	3	116	32x3½	SS	....	895	....	....	....	....	....
178	8-3 x4½	28.8	A.Kent	Stewart	Apleo	C	3	116	34x4	SS	†1185	1185	....	....	....	....	....
HUDSON																	
Super-6	6-3½x5	29.4	Delco	Own	Delco	D	3	125½	35x4½	SS	1650	....	1650	1950	2175	2925	....
HUPMOBILE																	
	4-3½x5½	22.5	A.Kent	Zenith	Wsths	D	3	119	34x4	SS	1185	1185	....	....	1735	....	....
N-U	4-3½x5½	22.5	A.Kent	Zenith	Wsths	D	3	134	35x4½	SS	....	....	1340	....	....	....	....
INTER-STATE																	
T	4-3½x5	19.6	Remy	Schebler	Remy	C	3	110	33x4	SS	875	925	†940	....	....	....	
JACKSON																	
349	8-3 x3½	28.8	A-Lite	Zenith	A-Lite	DP	3	118	34x4	SS	1295	1295	†1395	....	1995	....	1505
350	8.3 x3½	28.8	A-Lite	Zenith	A-Lite	DP	3	112	32x4	SS	....	....	....	....	....	....	....
	4-3½x5	19.6	Conn	Schebler	A-Lite	C	3	112	32x4	SS	....	985	....	....	....	....	....
	8-2½x4½	26.4	Conn	Schebler	A-Lite	C	3	112	32x4	SS	....	1195	....	....	....	....	....
	8-3½x4½	39.3	Conn	Schebler	A-Lite	C	3	124	34x4½	QD	....	....	1685	....	....	....	....
JEFFERY																	
Four	4-3½x5½	22.5	Dixie	Stmbg	Bijur	DP	3	116	34x4	SS	1065	....	1095	....	1260	....	1320
Six	6-3½x5½	29.4	Dixie	Rafld	Bijur	DP	3	125	34x4	SS	1435	....	1465	....	1630	....	1690
JORDAN																	
Sixty	6-3½x5½	29.4	Bosch	Stmbg	Bijur	DD	3	127	35x4½	SS	1650	†1750	1650	2300	2350	3000	....
KING																	
E	8-3 x5	28.8	A.Kent	Ball	W.Lnrd	DP	3	120	34x4	SS	†1585	‡1585	1585	....	2150	....	....
KISSEL																	
642	6-3½x5½	31.54	Eismn	Stmbg	Own	DD	3	128	34x4	SS	....	1650	1850	....	2000	....	....
100-pt.	6-3½x5	25.3	Remy	Stmbg	Own	C	3	117	33x4	SS	†1195	1195	....	1635	1950	....	1635
KLINE																	
638	6-3½x4½	25.3	Wsths	Rafld	Wsths	DP	3	120	34x4	SS	1175	1195	†1195	....	....	....	....
LAUREL																	
35	4-3½x4½	33.8	Dixie	Schebler	Disco	D	3	112	32x3½	QD	†895	850	885	....	....	....	....
LEXINGTON																	
6-O-17	6-3½x4½	25.4	Conn	Rafld	Wsths	DD	3	116	32x4	QD	†1185	1185	....	1350	1350	....	....
6-P	6-4½x5½	27.2	A.Kent	Stmbg	Wsths	C	3	144	36x4½	QD	†2675	....	2875	....	....	....	....
								132									
LIBERTY																	
6	6-3½x4½	23.4	Delco	Rafld	Delco	DP	3	115	32x4		†1095	1095	..		1295	..	

PATERSON																			
6-45	6-3½x4½	25.4	Delco	Stmbg	Delco	C	3	117	32x4	C	†1095	1095	1095	....	....	....	....
PATHFINDER																			
2B-TC-2C	12-2½x5	39.6	Delco	Stmbg	Delco	DD	3	135	35x5	SS	....	....	3250	....	....	....	....
PEERLESS																			
56-2	8-3½x5	33.8	A.Kent	Special	G & D	DD	3	125	35x4½	SS	†1890	....	1890	2700	2750	3200	....
PHIANNA																			
M	4-3½x6	24.9	Bosch	H & N	W.Lnd.	DD	4	....	32x4½	....	Chassis	....	3600	....	....	....	....
PIERCE-ARROW																			
38-C-4	6-4 x5½	38.4	Bosch	Own	Wsths	C	4	134	36x4½	QDC	4800	4800	†4800	5900	....	....	....
48-B-4	6-4½x5½	48.6	Bosch	Own	Wsths	C	4	142	37x5	QDC	5400	5400	5000	6800	....	....	....
66-A-4	6-5 x7	60	Bosch	Own	Wsths	C	4	147½	38x5½	QDC	†6400	6400	6500	7800	....	....	....
PILOT																			
6-45	6-3½x5	23.4	Delco	Zenith	Delco	DP	3	119	32x4	SS	†1150	1150	....	....	....	....	....
PREMIER																			
6-B	6-3½x5½	27.3	Delco	Johnson	Delco	DP	3	125½	35x4½	SS	†1895	....	1895	....	2900	3150	....
PRINCESS																			
4-36	4-3½x4½	22.5	Splitdorf	Schebler	Disco	D	3	108	32x3½	....	775	775	‡775	....	....	....	....
PULLMAN																			
424-32	4-3½x4½	22.5	Dixie	Stmbg	Splitdorf	D	3	114	31x4	SS	825	825	†825	....	....	....	....
REGAL																			
4-32	4-3½x4½	19.6	Heinse	Carter	Heinse	C	3	108	30x3½	DC	....	745	....	....	....	....	....
F	8-3 x4½	28.8	....	Johnson	Dyneto	C	3	115	33x4	SS	1200	....	....	....	....	....	....
REPUBLIC																			
E	6-4½x5	43.3	Delco	Rafld	Delco	C	4	133	36x4½	SS	....	†2950	2950	....	....	....	....
REO																			
M	6-3 7/16x5½	30.4	Remy	Rafld	Remy	DD	3	126	34x4½	SS	....	†1250	1250	....	1750	....	....
R	4-4½x4½	27.2	Remy	Johnson	Remy	DD	3	115	34x4	SS	‡875	875	....	....	....	....	1025
RICHMOND																			
6-17	6-3½x5	29.4	Delco	Stmbg	Delco	C	3	124	35x4½	....	....	....	....	....	....	....	.....
4-35	4-4 x4½	25.6	Dixie	Stmbg	Delco	C	3	124	35x4½	....	900	900	925	....	....	....	....
ROAMER																			
R.A.	6-3½x5	23.4	Bosch	Stmbg	Bijur	D	3	127	34x4	SS	2150	1850	....	....	....	....	....
ROSS																			
C	8-3½x5	33.8	A.Kent	Zenith	W.Lnrd.	DD	3	130	35x4½	SS	‡1550	†1550	1550	....	....	....	....
SAXON																			
B-5-R	4-2½x4	12.1	A.Kent	Rebh	Wagner	DD	3	96	30x3	DC	495	....	....	....	....	....	....
S-4	6-2½x4½	19.8	Remy	Rafld	Wagner	DD	3	112	32x3½	SS	....	865	....	....	....	....	....
SCRIPPS-BOOTH																			
D	8-2½x3½	22.0	Remy	Zenith	Wagner	DD	3	120	32x4	SS	†1285	....	....	....	....	....	1460
G	4-3½x4	24.5	Remy	Zenith	Remy	C	3	110	30x3½	C	935	....	....	1450	....	....	....
SIMPLEX																			
5	6-4½x6½	45.9	Eismn	Nwcmb	Bosch	D	4	143½	37x5r	QDC	Chassis	6000	....	....	....	....	....
SINGER																			
17	6-4 x5½	38.4	Bosch	Rafld	Wsths	DD	4	136	35x5	QD	3500	†3500	3500	....	....	4600	....
STANDARD																			
8	8-3½x5	38.8	Splitdorf	Zenith	Apleo	D	3	127	35x4½	....	†1950	....	2000	....	....	3500	2500
STANLEY																			
Stmr	2-4 x6	....	....	....	....	..	..	130	34x4½	SS	‡2300	2200	2300	....	....	....	....
STEARNS																			
SKL4	4-3½x5½	22.5	Remy	Schebler	Wsths	DD	3	119	34x4	QDC	††1450	1450	....	2050	....	2900	2050
SK8	8-3½x5	33.8	Remy	Rafld	Wsths	DD	3	123	35x4½	QDC	†2150	....	2150	2900	....	3500	....
STEPHENS																			
60-65	6-3½x4½	25.3	Conn	Zenith	A-Lite	DD	3	115	32x4	....	‡1150	1150	....	....	....	....	....
STEWART																			
T	6-3½x5	29.4	Bosch	Rafld	Wsths	D	3	127	34x4½	SS	‡1950	....	1950	....	....	....	....
STUDEBAKER																			
SF-4-40	4-3½x5	24.2	Remy	Schebler	Wagner	C	3	112	34x4	SS	‡930	....	940	....	....	....	1140
ED-6-50	6-3½x5	36.32	Remy	Schebler	Wagner	C	3	122	34x4	SS	‡1170	....	1180	1750	1700	2600	1380
STUTZ																			
R	4-4½x5½	36.1	Bosch	Stmbg	Remy	C	3	130	34x4½	SS	2275	†2550	*2550	....	....	....	....
SUN																			
17	6-3½x5	23.4	Remy	Rafld	Remy	DP	3	116	34x4	SS	†1145	1095	1145	....	1295	....	....
VELIE																			
28	6-3½x4½	25.3	Remy	Stmbg	Remy	DP	3	115	32x4	SS	1115	1135	†1135	1750	1685	....	....
27	6-3½x5½	29.4	Remy	Stmbg	Remy	DP	4	124	35x4½	SS	....	....	1600	....	....	....	....
WESTCOTT																			{2190
S-17	6-3½x5½	29.4	Delco	Rafld	Delco	DD	3	125	35x4½	SS	1590	1590	1690	....	....	....	{2090
WHITE																			
GAH	4-3½x5½	22.5	Bosch	Own	Own	P	4	115	32x4	QDC	‡2650	2700	.....	..	....	...	....
GED	4-4½x6½	28.9	Bosch	Own	Own	P	4	133½	36x4½	QDC	3750	....	3800	....	....	....	....
16-Valve	4-4½x5½	28.9	....	Own	L.N.	P	4	137½	37x5	....	....	....	4600	....	....	....	....
WILLYS-KNIGHT																			
88-4	4-4½x4½	27.2	Conn	Tltsn	A-Lite	C	3	121	34x4½	SS	....	....	1285	....	1950	1950	....
WILLYS																			
88-6	6-3½x5½	29.4	Conn	Tltsn	A-Lite	C	3	125	35x4½	SS	....	....	1325	....	....	....	....
WINTON																			
33	6-3½x5½	33.7	Bosch	Rafld	Bijur	DD	4	128	36x4½	QD	2685	2685	2735	3600	3900	3900	....
48	6-4½x5½	48.6	Bosch	Rafld	Bijur	DD	4	138	37x5	QD	3500	3500	3500	4500	4750	4750	....
YALE																			
8	8-3½x4½	31.25	Remy	Rafld	Disco	DD	3	126	34x	....	....	....	1350	....	....	....	....

*6-passenger. †4-passenger, ‡3-passenger.

ABBREVIATIONS—"G & D" Gray & Davis, "A-Lite" Auto-lite, "Wsths" Westinghouse, "Eismn" Eisemann, "A. Kent" Atwater Kent, "Emrsn" Emerson, "Sevsn" Sevison, "Undec" Undecided, "Brling" Berling, "Kngstn" Kingston, "Natnl" National, "W.Lnrd" Ward Leonard, "U S L" United States Lighting, "Conn" Connecticut, "Nwcmb" Newcomb, "N E" North East, "A-C" Allis-Chalmers, "L-N" Leece-Neville, "O. M." Owen Magnetic, "B-Rshm" Bosch-Rushmore, "Mgnto" Magneto, "Tltsn" Tillottson, "Atzr" Atomizer, "Rebh" Reichenbach. Clutches: "C" Cone, "P" Plate, "DD" Dry Disk, "DP" Dry Plate, "D" Disk, "G" Gearless, "F" Friction. Rims: "Q D" Quick Detachable, "SS" Straight Side, "C" Clincher, "QDR" Quick Detachable Reversible, "QDC" Quick Detachable Clincher, "R & M" Robbins & Myers.

NOTE—The figures given in columns underneath 2-, 5- and 7-passenger, represent the list catalog prices of the models. Where a tire size is given, as for instance "37x5½r," it means that the rear tires are 27x5½ and the front are of smaller dimensions

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Coming Events

Shows

Jan. 27-Feb. 3—Portland, Ore., Eighth Annual, Dealers' Motor Car Association of Oregon, Armory. Joseph M. Rieg, Mgr.

Jan. 27-Feb. 3—Columbus, O., Fourth Annual, Columbus Auto Show Co., Memorial Hall. W. H. Payne, Mgr.

Jan. 27-Feb. 3—York, Pa., York County Dealers' Association, Queen Street Tabernacle. S. S. Pfeiffer, Sec.

Jan. 27-Feb. 3—Richmond, Va., First Annual, First Regiment Armory. Monte D. Stone, Mgr.

Jan. 27-Feb. 3—Chicago, Seventeenth Annual Show, Coliseum and First Regiment Armory.

Jan. 28-Feb. 3—Wilmington, Del., Hotel Du Pont. J. H. Nixon, Mgr.

Feb. 3-10—Minneapolis, Minn., Twin Cities Automobile Show, Minneapolis Automobile Trade Assn., National Mazda Lamp Bldg. W. B. Wilmot, Mgr.

Feb. 5-10—Indianapolis, Ind., Indianapolis Automobile Trade Assn., Steinhart Bldg., John B. Orman, Mgr.

Feb. 5-10—Bangor, Me., Show, Bangor Automobile Assn., Auditorium. Chas. P. Bukor, Mgr.

Feb. 7-9—Washington, Pa., Washington Automobile Dealers' Association, Washington Amusement Co. Rink. C. B. McAlister, Sec.

Feb. 7-10—Bay City, Mich., Automobile and Accessories, Armory. F. D. Shaver, Mgr.

Feb. 7-11—Kalamazoo, Mich., State Armory, Kalamazoo Automobile Dealers' Assn. R. E. Fair, Mgr.

Feb. 10-17—Harrisburg, Pa., Capital City Motor Car Dealers' Association, Tenth and Market Streets. J. Clyde Myton, Mgr.

Feb. 10-17—Hartford, Conn., Hartford Automobile Dealers' Association, State Armory. R. F. Smith, Mgr.

Feb. 10-18—San Francisco, Cal., Show, San Francisco Motor Car Dealers' Assn., Exposition Auditorium. G. A. Wahlgreen, Mgr.

Feb. 12-17—Toledo, O., Toledo Auto Shows Co. H. V. Buelow, Mgr.

Feb. 12-17—Louisville, Ky., Tenth Annual Show, First Regiment Armory, Louisville Automobile Dealers' Assn. P. S. Longest, Mgr.

Feb. 12-17—Kansas City, Mo., Show, Kansas City Motor Car Dealers' Assn.

Feb. 12-17—Kansas City, Mo., Second Annual Tractor Show, Union Station Plaza.

Feb. 13-17—Williamsport, Pa., Armory Hall. John Kelley, Mgr.

Feb. 13-17—Sioux City, Ia., Sioux City Auto Dealers' Trade Assn., Auditorium and Annex. J. A. Fleming, Mgr.

Feb. 14-17—Peoria, Ill., Show, Peoria Automobile and Accessory Dealers' Assn., Coliseum. W. O. Ireland, Mgr.

Feb. 15-17—Racine, Wis., Fifth Annual Racine Auto Show Assn., Lake Side Auditorium. Chas. A. Myers, Mgr.

Feb. 17-24—Albany, N. Y., Sixth Annual, State Armory, Albany Automobile Dealers' Assn.

Feb. 17-24—Pittsburgh, Pa., Automobile Dealers' Assn. of Pittsburgh, Inc., Motor Square Garden. John J. Bell, Mgr.

Feb. 19-24—Bridgeport, Conn., Fourth Annual, State Armory and Casino. B. B. Stelber, Mgr.

Feb. 19-24—Pittsfield, Mass., State Armory. James L. Callahan, Mgr.

Feb. 19-24—Portland, Me., Exposition Building.

Feb. 19-24—South Bethlehem, Pa., Third Annual, Pleasure Cars, Coliseum. J. L. Elliott, Mgr.

Feb. 19-24—St. Louis, Mo., Show, St. Louis Automobile Manufacturers' and Dealers' Assn., Overland Building. Robt. E. Lee, Mgr.

Feb. 19-24—Duluth, Minn., Show, New Armory Building. Duluth Automobile Dealers' Assn. W. Daly, Mgr.

Feb. 19-24—Syracuse, N. Y., Show, State Armory, Syracuse Automobile Dealers' Assn., H. T. Gardner, Mgr.

Feb. 19-24—Des Moines, Iowa, Eighth Annual Show, Des Moines Automobile Dealers' Assn., Coliseum. C. G. Van Vliet, Mgr.

Feb. 19-24—Grand Rapids, Mich., Eighth Annual Show, Automobile Business Association of Grand Rapids, Klingman Furniture. Ernest T. Conlon, Mgr.

Feb. 19-24—Springfield, O., Memorial Hall, Springfield Automobile Trade Assn. C. S. Burke, Sec.

Feb. 21-23—Springfield, Mo., Springfield Automobile and Accessories Assn.

Feb. 21-24—Flint, Mich., Flint Auto & Accessory Houses, Coliseum, Lake Side Park. E. W. Jeffers, Mgr.

Feb. 22-24—Asheville, N. C., Asheville Auto Trade Assn.

Feb. 24-Mar. 3—Newark, N. J., N. J. Auto Trade Association, First Regiment Armory. Claude E. Holgate, Mgr.

Feb. 24-Mar. 3—Atlanta, Ga., Atlanta Auto Trade & Accessory Assn., Auditorium. R. H. Martin, Mgr.

Feb. 24-March. 6—Brooklyn, N. Y., Sixth Annual, Brooklyn Motor Vehicle Dealers' Assn., Twenty-third Regiment Armory.

Feb. 26-Mar. 3—Charleston, S. C., First Charleston Adv. Club and Local Dealers. Tent, Marion Square.

Feb. 26-Mar. 3—Wilkes-Barre, Pa., Hugh B. Andrews, Mgr.

Feb. 26-March 3—Utica, N. Y., Utica Automobile Dealers' Assn., State Armory.

Feb. 26-March 3—Omaha, Neb., Twelfth Annual Show, Omaha Automobile Show Assn. Clarke G. Powell, Mgr.

Feb. 26-Mar. 3—So. Bethlehem, Pa., Commercial Vehicles. J. L. Elliott, Mgr.

Mar. 1-3—Champaign and Urbana, Ill., Auto Trade Association of Champaign County, University of Illinois Armory. Leslie R. Lumley, Mgr.

Mar. 3-5—Green Bay, Wis., Brown County Automobile Trade Assn., Armory B.

March 3-10—Washington, D. C., Middle Atlantic Motor Assn., Inc., Union Bldg.

March 3-10—Boston, Mass., Fifteenth Annual Show, Boston Automobile Dealers' Assn. C. I. Campbell, Gen. Mgr.

Mar. 5-10—Jamestown, N. Y., Third Annual, Jamestown Automobile Dealers' Assn.; Armory, C. A. Hanvey, Mgr.

March 6-10—Fort Dodge, Iowa, Sixth Annual Show, White Terminal Warehouse. G. W. Tremain, Mgr.

March 7-10—St. Joseph, Mo., St. Joseph Automobile Dealers' Assn., Auditorium.

Mar. 13-16—Vancouver, B. C., British Columbia Automobile Association, Horse Show Bldg.

Mar. 13-16—Fargo, N. D., North Dakota and Minnesota Auto Dealers' Association, Auditorium and Armory. W. M. Ball, Mgr.

Mar. 14-17—Trenton, N. J., J. L. Brock, Mgr.

March 14-17—Mason City, Iowa, Third Annual, Armory.

March 14-17—Davenport, Iowa, Show, Coliseum Building, Tri-City Automobile Trade Assn. C. F. Burmeister, Mgr.

Mar. 17-24—Pittsburgh, Pa., Motor Square Garden, J. J. Bell, Mgr.

Mar. 19-24—Cedar Rapids, Iowa, Show, Cedar Rapids Automobile Trade Assn.

Mar. 21-24—Trenton, N. J., Trenton Auto. Trade Assn., Armory. John L. Brock, Mgr.

Mar. 27-31—Deadwood, S. D., Fifth Annual, Deadwood Auto Show. J. E. Nelson, Mgr.

April 4-7—Stockton, Cal., Second Annual, San Joaquin Auto Trades Assn. Samuel S. Cohn, Mgr.

Sept. 2-9—Spokane, Wash., Interstate Fair.

General

Feb. 5-9—Boston, Mass., Seventh American Good Roads Congress, Mechanics Building.

1200 Redden Truck-Makers for Texas

NEW YORK, Jan. 15—Negotiations are being completed in a deal whereby one of the largest automobile dealers in Texas contracts for 1200 Redden Truck-Makers, representing a total value of about $420,000. These unts, which are manufactured by the Redden Motor Truck Co., Detroit, are designed to convert Ford chassis for truck use. The Texas firm plans to establish agencies throughout its territory to handle the units.

Bumper Injunction Is Issued

MILWAUKEE, Jan. 25—A preliminary injunction has been granted G. F. Dischер, president and general manager of the Gemco Mfg. Co., against the Shadbolt & Boyd Iron Co. prohibiting the sale of an automobile bumper manufactured by the Emil Grossman Mfg. Co. pending trial of a suit for infringement. The injunction covers patent No. 1,052,224 relating to a bumper bracket having a lug which bears against the front end of the frame side member and an adjustable clamp using a transverse bolt passing through two vertical slots, one on each side of the frame member. The injunction covers the eastern district of Wisconsin. The Grossman company will appeal.

Kissel Planning a Twelve

MILWAUKEE, Jan. 29—That the Kissel Motor Car Co., Hartford, Wis., is bringing out a twelve-cylinder model of the KisselKar is indicated by the fact that Otto P. Kissel, with his family, has left on a 3 months' trip to the Pacific Coast and during this time will put the new model to exhaustive tests. The Kissels left on Monday, and the car, which is equipped with an "All-Year" body, follows by freight.

Liberty Raises Prices $100

DETROIT, Jan. 26—The Liberty Motor Car Co. will advance its prices on all models $100 Feb. 1. The touring car will advance to $1,195; the closed coupled four-passenger roadster to $1,195; the brougham to $2,450, and the touring sedan to $1,395. The company will add a Springfield body model about the middle of March. This car will sell for $1,795.

Motor Securities Quotations

	Jan. 27, 1917 Bid	Asked
Ajax Rubber Co.	77	77¾
J. I. Case T. M. Co. pfd.	87	87½
Chalmers Motor Co. com.	30	5
*Chandler Motor Car Co.	100	101½
Chevrolet Motor Co.	115	125
Fisher Body Corp. com.	37½	40
Fisher Body Corp. pfd.	93	95
Fisk Rubber Co. com.	75	85
Fisk Rubber Co. 1st pfd.	110	115
Fisk Rubber Co. 2nd pfd.	90	100
Firestone Tire & Rubber Co. com.	140	145
Firestone Tire & Rubber Co. pfd.	107	108½
*General Motors Co. com., new	119	119½
*General Motors Co. pfd., new	91	93
*B. F. Goodrich Co., com.	59¼	59½
*B. F. Goodrich Co. pfd.	111	111½
Goodyear Tire & Rubber Co. com.	278	282½
Goodyear Tire & Rubber Co. pfd.	107½	108¼
Grant Motor Car Corp.	6	8
Hupp Motor Car Corp. com.	4½	5
International Motor Co. com.	16	20
*Kelly-Springfield Tire Co. com.	58¾	59⅜
*Kelly-Springfield Tire Co. 1st pfd	90	95
*Lee Rubber & Tire Corp.	24	24¼
*Maxwell Motor Co. com.	54¾	55½
*Maxwell Motor Co. 1st pfd.	72	74
*Maxwell Motor Co. 2nd pfd.	38	39
Miller Rubber Co. com.	248	255
Miller Rubber Co. pfd.	107½	108½
Packard Motor Car Co. com.	163	170
Packard Motor Car Co. pfd.	100½	103
Paige-Detroit Motor Car Co.	40½	41¼
Portage Rubber Co. com.	164	166
Regal Motor Car Co. pfd.	27	35
†Reo Motor Car Co.	37	38
Saxon Motor Car Corp.	63	66
Springfield Body Corp. com.	77	83
Springfield Body Corp. pfd.	115	120
Standard Motor Construction Co.	5	6
Stewart Warner Speed. Corp. com	98¼	99¼
*Studebaker Corp. com.	106½	108
*Studebaker Corp. pfd.	107	108½
Swinehart Tire & Rubber Co.	84	87
United Motors Corp.	43⅝	44
*U. S. Rubber Co. com.	59½	60
*U. S. Rubber Co. pfd.	110	110¼
White Motor Co.	51⅝	52
*Willys-Overland Co. com.	36¼	36½
*Willys-Overland Co. pfd.	97½	98½

*At close, Jan. 27. Listed N. Y. Stock Exchange. †Par value, $10; others, $100.

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MICHELIN Means Dollars for Dealers

Sales come easy to the dealer who offers Michelin tires—for not only are Michelin prices moderate, but on Michelin tires is a name that everywhere stands for unequalled durability.

The important thing, however, is not so much that sales come easy to the Michelin dealer, but that Michelin sales mean **re-sales.**

The moderate price and unsurpassed durability of Michelin Tires result in tire economy and satisfaction such as cannot possibly be secured from any other make. This means a steadily growing clientele for the Michelin dealer.

The Michelin proposition is the **best** tire proposition for the **best** tire dealers everywhere.

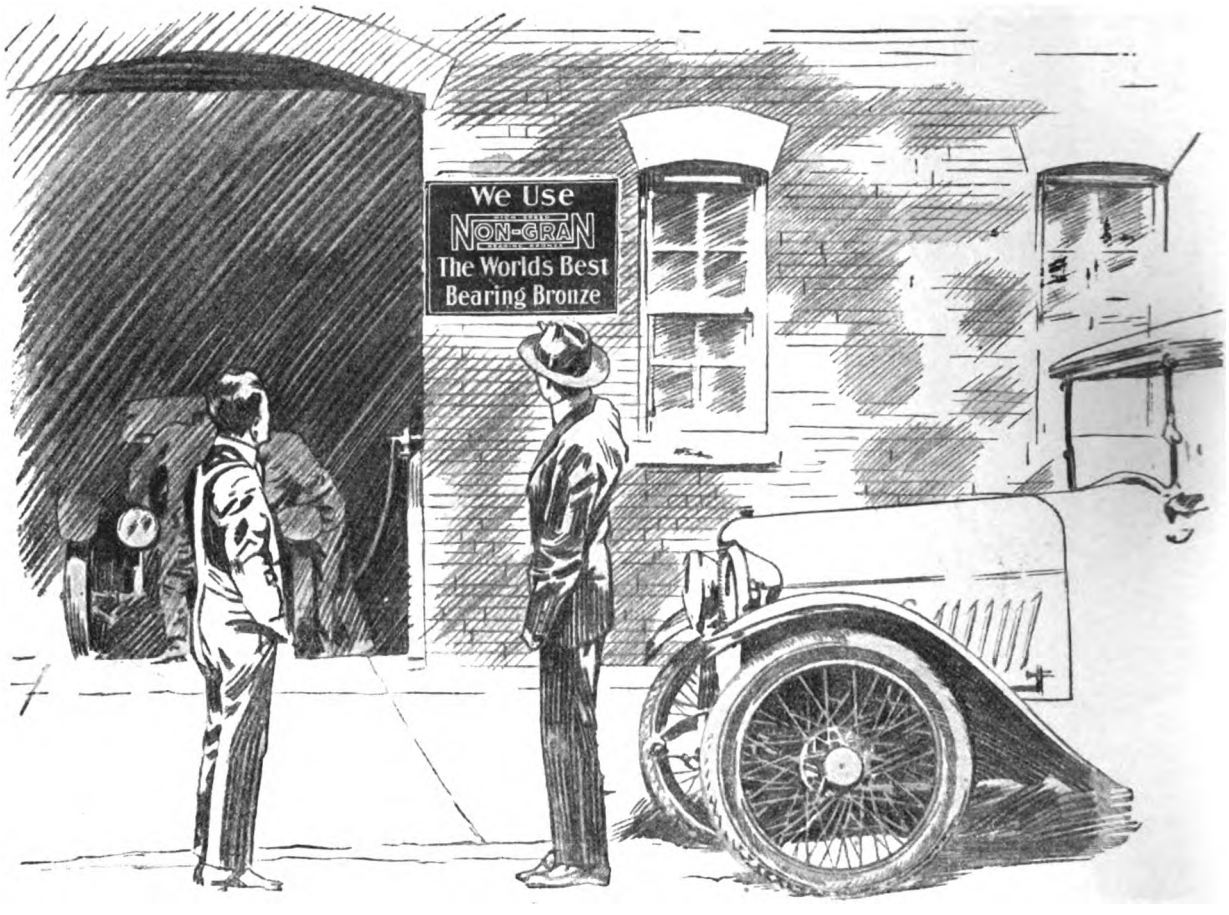
Drop us a line for particulars.



Michelin Tire Company

Milltown, N. J.

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Flawless Non-Gran

WE ARE EDUCATING YOUR CUSTOMERS

—to ask for NON-GRAN replacements

This NON-GRAN Sign is of value to you.

It not only **puts you in line for increased business** that our extensive advertising will send to your shop, but it inspires confidence in the minds of your customers.

We have told them—which is true—that to have their worn-out bushings replaced with NON-GRAN bushings will **save them money** by adding to the life and value of the job you give them.

We have told them—which is also true —that a medium priced car equipped with the finest quality bushings will stand up and deliver service practically as long as the higher priced cars.

We have told them that you would have to **charge them more** for NON-GRAN because it costs you more.

But that you would gladly furnish them with NON-GRAN bushings because **your good work would be appreciated** at its real value when backed up by this high-quality, long-wearing material.

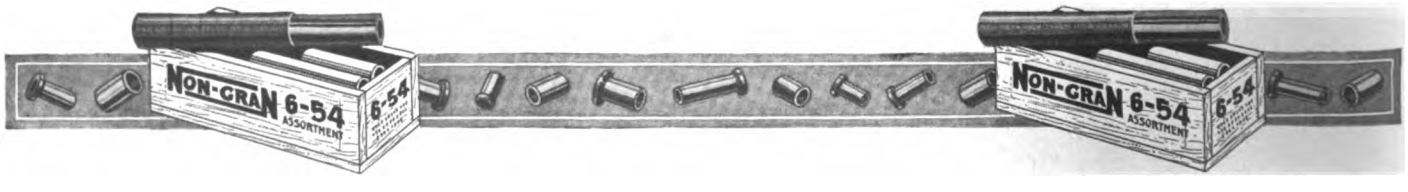
When they see this sign they will not only be still further convinced of your reliability and high standing, but they will be ready for the increased charge and glad to pay it.

Write at once for instructive booklet, "The Backbone of Your Repair Business." This booklet will show you the way to Greater Immediate Profits and Stronger Future Business.

American Bronze Company
Berwyn - - - Pennsylvania

Sole Makers of Non-Gran and largest exclusive manufacturers of Bearing Bronze in the World.

HIGH SPEED
NON-GRAN
BEARING BRONZE



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No Straining— No Complaining

The Stephens Six was designed and made to climb hills. Willingly and quietly, the powerful six-cylinder motor takes the sturdy car to the top with the same ease and eagerness as it sends it racing over the level country at fifty miles an hour.

With throttle open and the gears in high, the Stephens Six approaches a steep hill with confidence, climbs the grade with enthusiasm, and when it reaches the top, neither quivers nor chokes from exhaustion.

The motor of the Stephens Six has reserve power, the punch for the emergency pull.

Gifted with the Fighting Heart

There is no cowardice in the Stephens Six motor. Climbing steep hills and ploughing through deep sand and mud is only a part of the game, just as exhilarating as playing tag with Time and Distance on the open road.

The corpulent man, who pants and puffs on the tortuous uphill journey, has good reason to envy the Stephens Six. His bulk is too much for his strength. There is no superfluous poundage in the Stephens Six. What weight the car has is for strength and security and nicely distributed.

The Stephens Six has no fear of hills. Neither have driver and passengers. They know that the motor is powerful, that the frame and chassis are strong, that the wheelbase is long enough to eliminate sidesway. The brakes hold when applied.

Stephens Six dealers say that there are no hills to climb in selling the Stephens Six for $1150. Their only complaint is that they may have to brake their energies later in the season when the supply will not meet the demand. There is still some choice territory open. Our dealers' proposition is attractive, our co-operation valuable.

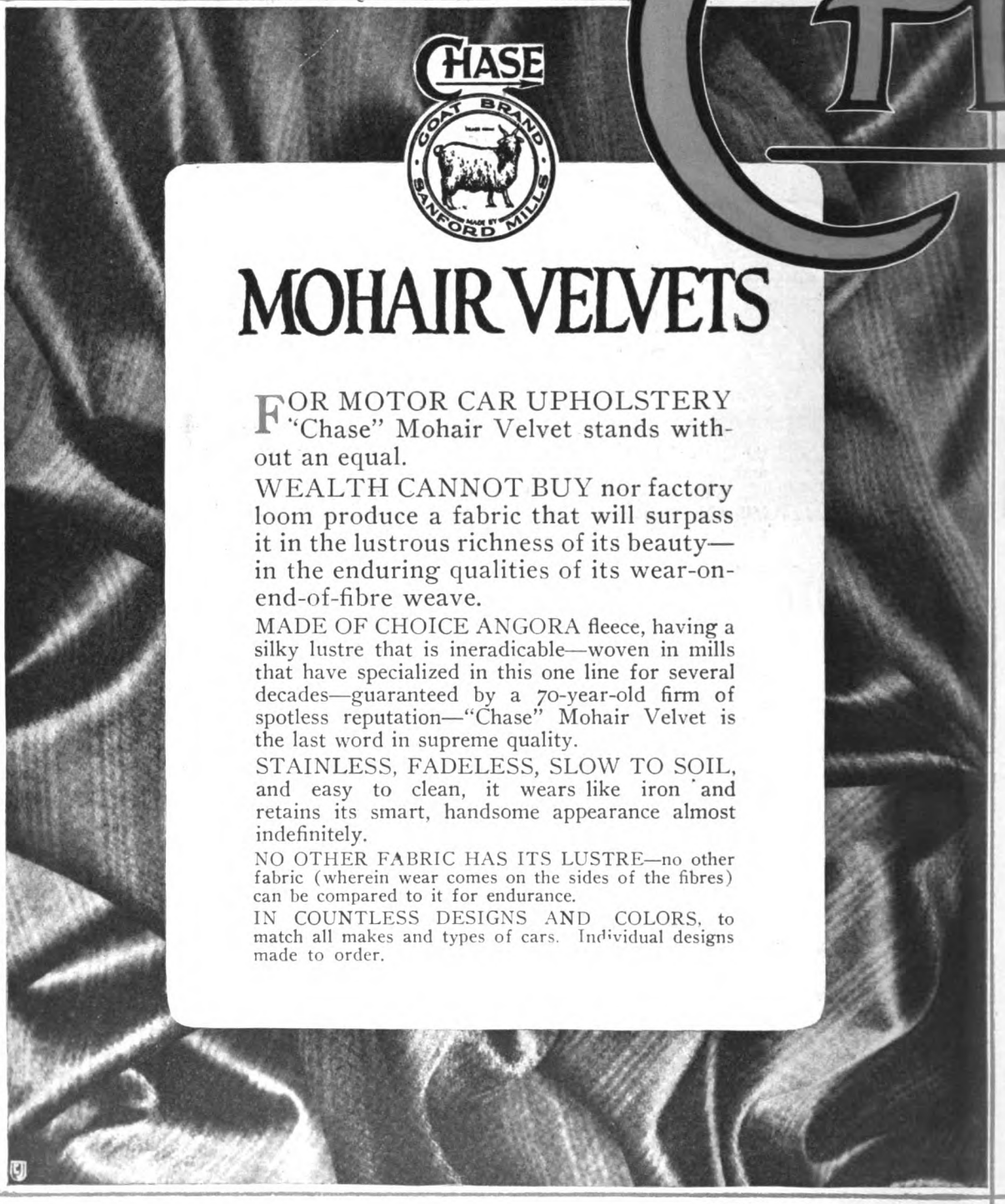
Two models, each $1150
Five-passenger Touring Car
Three-passenger Roadster

See the Stephens Six at the Chicago Automobile Show, Booth 13 Coliseum Basement. It is one of the worth-while exhibits of the Show.

STEPHENS MOTOR
Branch of Moline Plow Co.
MOLINE, ILLINOIS
Factory: Freeport, Ill.

STEPHENS SIX
"The Car With Punch"

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MOHAIR VELVETS

FOR MOTOR CAR UPHOLSTERY "Chase" Mohair Velvet stands without an equal.

WEALTH CANNOT BUY nor factory loom produce a fabric that will surpass it in the lustrous richness of its beauty—in the enduring qualities of its wear-on-end-of-fibre weave.

MADE OF CHOICE ANGORA fleece, having a silky lustre that is ineradicable—woven in mills that have specialized in this one line for several decades—guaranteed by a 70-year-old firm of spotless reputation—"Chase" Mohair Velvet is the last word in supreme quality.

STAINLESS, FADELESS, SLOW TO SOIL, and easy to clean, it wears like iron and retains its smart, handsome appearance almost indefinitely.

NO OTHER FABRIC HAS ITS LUSTRE—no other fabric (wherein wear comes on the sides of the fibres) can be compared to it for endurance.

IN COUNTLESS DESIGNS AND COLORS, to match all makes and types of cars. Individual designs made to order.

·L·C·CHASE & CO
BOSTON
NEW YORK DETROIT CHICAGO

OTHER PRODUCTS OF OUR MILLS:
Plush Motor Robes, Wool Robes, Steamer Rugs, Wexford Motor Cloths for Tops and Slip Covers, Rubber Cloths for Tops and Side Curtains, Felt and Rubber Radiator Covers.

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ASE

In RAIN ~ or SHINE



DREDNAUT
Motor Topping

CHASE DREDNAUT MOTOR TOPPING COMBINES WITHIN ITSELF every good attribute that ingenuity has suggested and experience has proved.

IT IS A FINISHED PRODUCT MADE BY EXPERTS in this particular industry.

IT IS WATER-PROOF, EASILY CLEANED, AND EXTREMELY DURABLE. It remains whole, hardy and good looking as long as most cars last. Wetting will not rot it, and it is extremely hard to tear or scratch.

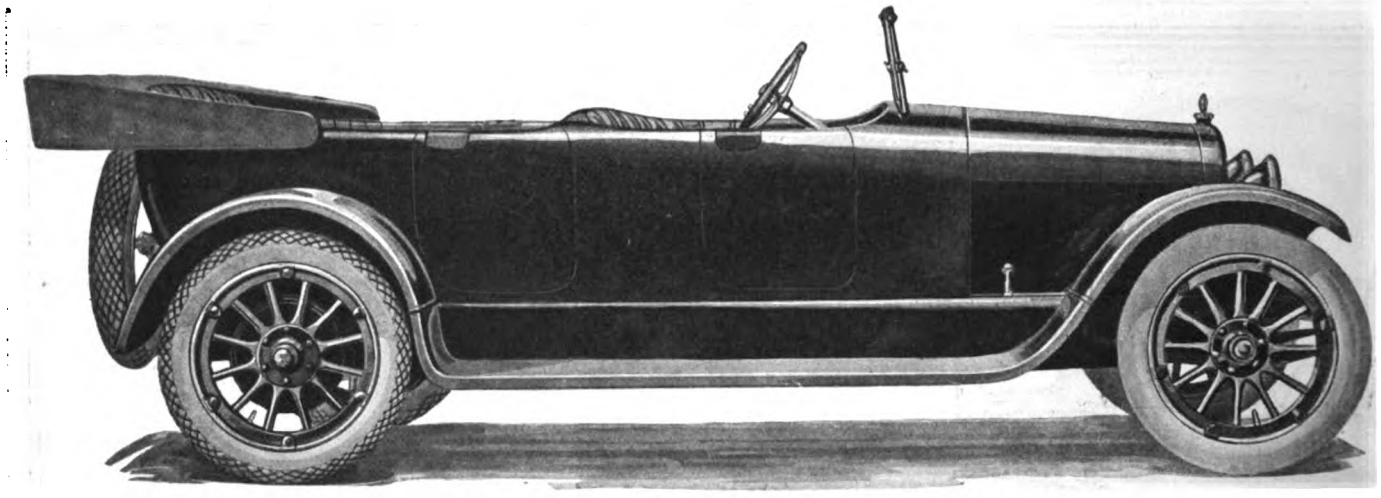
DUST WILL NOT STICK TO IT, AND MUDSPOTS ARE EASILY removed with sponge and water.

IT OUTSELLS ANY OTHER TOP MATERIAL SIMPLY ON ITS LOOKS, and actual experience has shown that those who use it once continue to use it altogether.

OTHER PRODUCTS OF OUR MILLS:
Plush Motor Robes, Wool Robes, Steamer Rugs, Wexford Motor Cloths for Tops and Slip Covers, Rubber Cloths for Tops and Side Curtains, Felt and Rubber Radiator Covers.

·L·C·CHASE & CO
BOSTON
NEW YORK DETROIT CHICAGO

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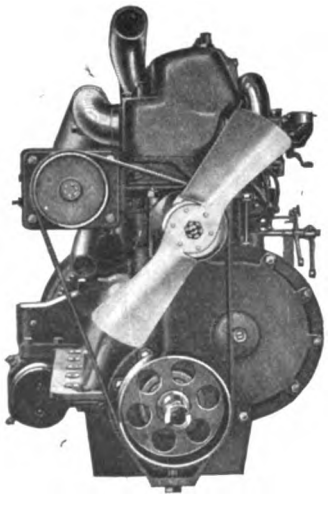


A Combination of Construction Features Unequalled at Double the Price

MONROE

With the Monroe Car you get a 4-cylinder motor, va've-in-head type, small, powerful, highly refined,—equally efficient and smooth-running at 3 mi'es an hour and at 60.

You get a pressure oiling system which adjusts the lubrication of the cylinders to the amount of power being generated, preventing over and under lubrication.



The Monroe

An M & S differential securing equal traction, except when turning and preventing skidding, spinning and sticking.

Cross compound cantilever springs and deep frame construction, giving exceptionally easy riding qualities.

The Brush patented chassis structure—in which the frame is conformed to the shape of the body in a way to secure extra rigidity and stability and at the same time permitting lighter frame and body construction.

The Monroe Car is an extremely light weight car for the power it generates and its carrying capacity. Every high grade standard unit necessary for efficiency has been installed in the Monroe.

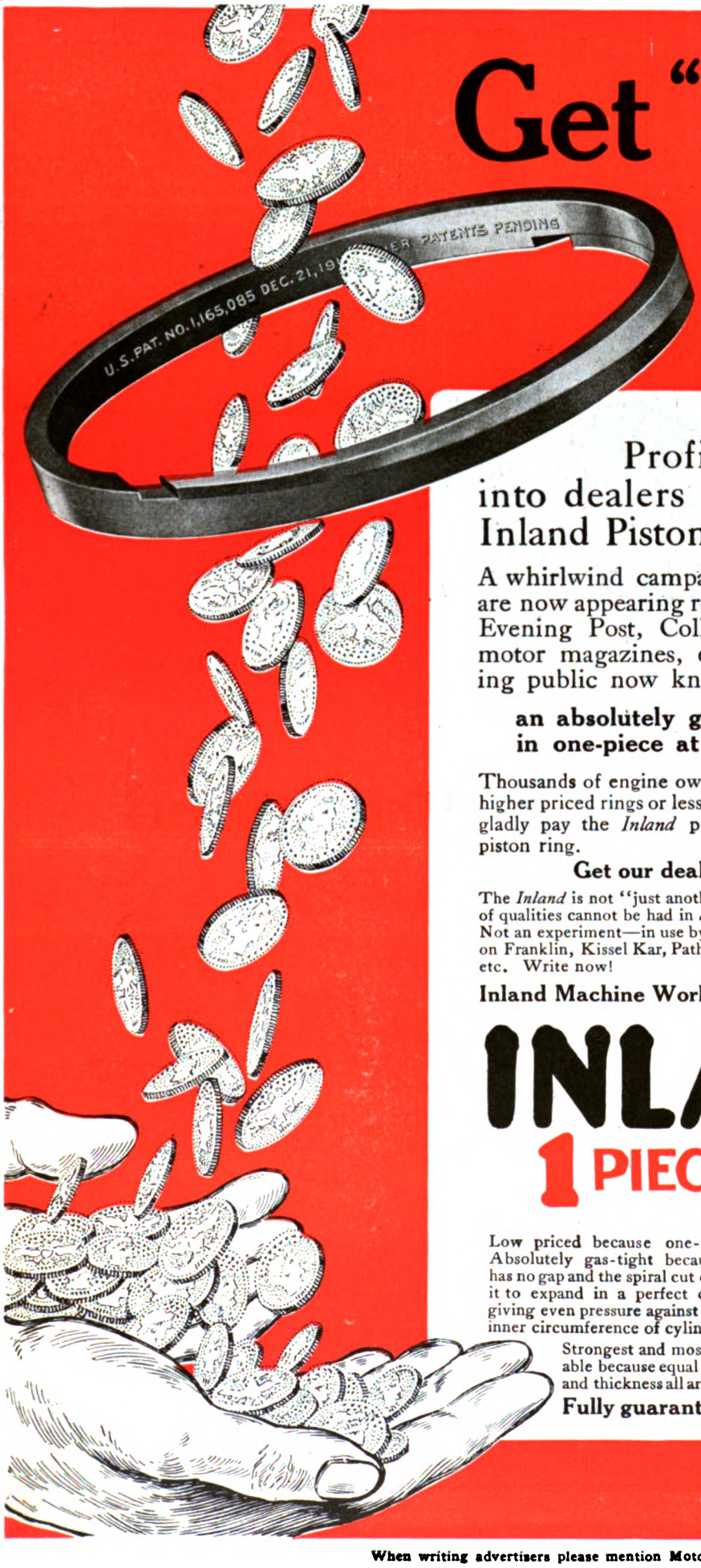
Where else can you get such a combination of up-to-date features and good cons ruction or $985?

THE MONROE MOTOR COMPANY

PONTIAC MICHIGAN

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Get "in" on this!



Profits are pouring into dealers hands through Inland Piston Rings.

A whirlwind campaign of corking big ads are now appearing regularly in the Saturday Evening Post, Collier's, Literary Digest, motor magazines, etc. The whole motoring public now knows that there is

an absolutely gas-tight piston ring in one-piece at a one-piece price.

Thousands of engine owners who would not consider higher priced rings or less efficient rings at any price, will gladly pay the *Inland* price for a perfectly gas-tight piston ring.

Get our deal to dealers quick

The *Inland* is not "just another piston ring"—its combination of qualities cannot be had in *any* other piston ring at *any* price. Not an experiment—in use by 100,000 cars. Standard equipment on Franklin, Kissel Kar, Pathfinder, Apperson, Weidely motors, etc. Write now!

Inland Machine Works, 815 Mound St., St. Louis, Mo.

INLAND
1 PIECE PISTON RING

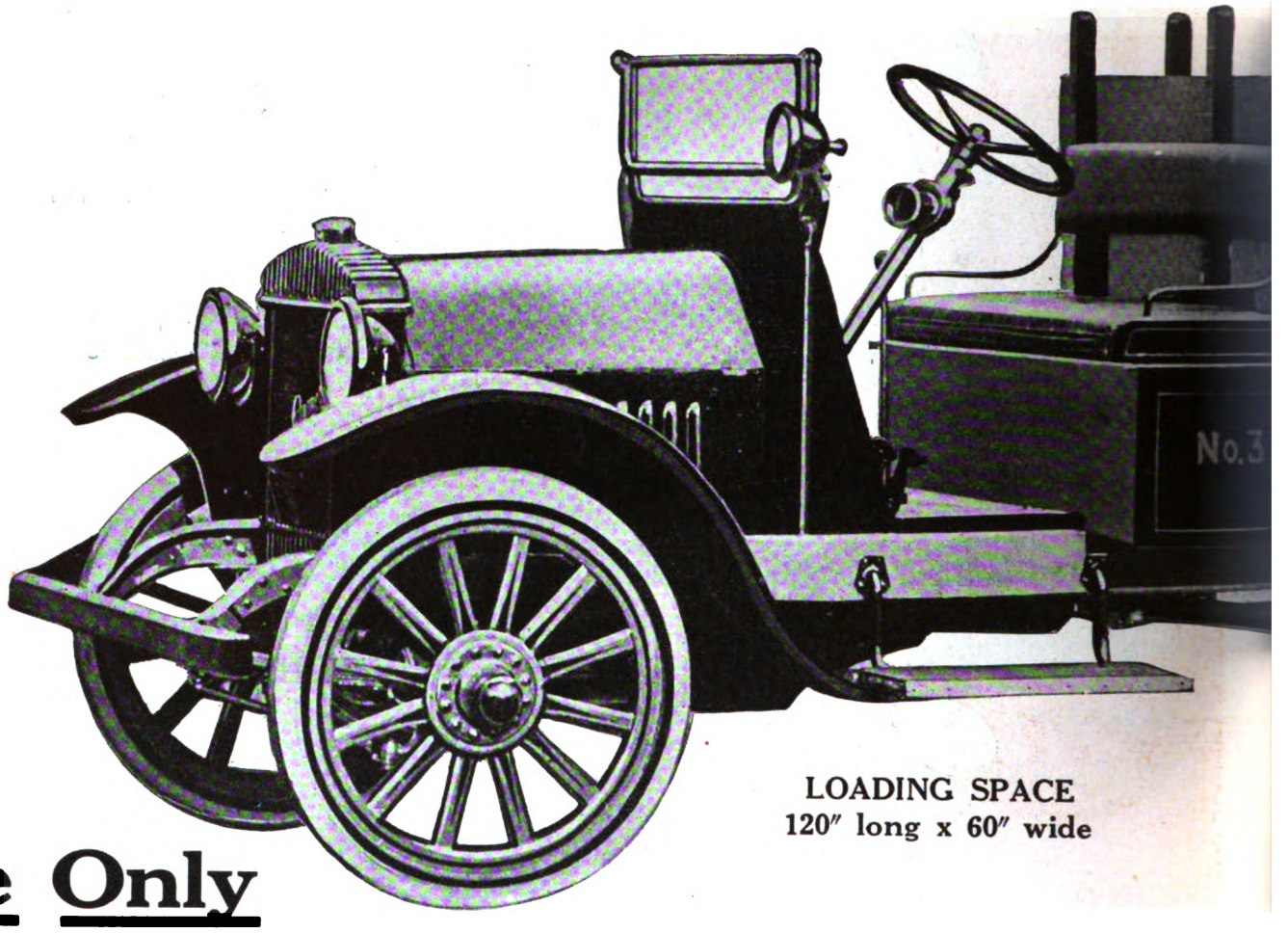
Low priced because one-piece. Absolutely gas-tight because it has no gap and the spiral cut causes it to expand in a perfect circle, giving even pressure against entire inner circumference of cylinder.

Strongest and most durable because equal width and thickness all around.

Fully guaranteed.



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LOADING SPACE
120″ long x 60″ wide

The Only Truck Completely Equipped Now—Without Extra Cost

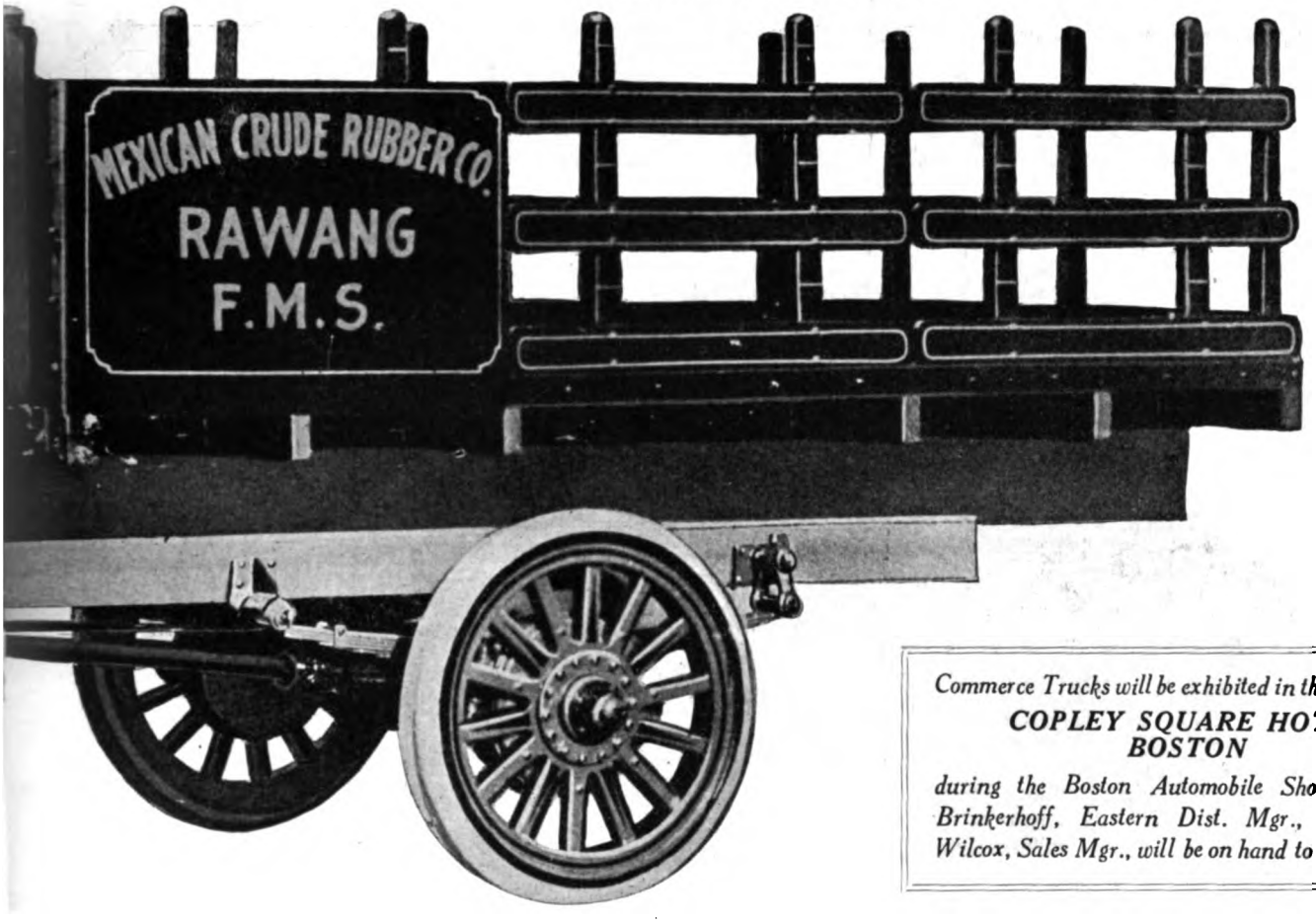
Commerce

ONE TON

MODEL ES
New Model just added to Commerce Line, New York Type, stake job. Completely equipped.

$1290

Digitized by Google



Commerce Trucks will be exhibited in the lobby of the
COPLEY SQUARE HOTEL
BOSTON
during the Boston Automobile Show. W. H. Brinkerhoff, Eastern Dist. Mgr., and George Wilcox, Sales Mgr., will be on hand to welcome you

THE COMMERCE IS COMPLETE, ready to go to work straight from the Dealer's hands.

THE BUYER IS NOT HELD UP while needful equipment is added at extra cost.

EVERYTHING KNOWN IN THE WAY OF useful, time-saving, labor-saving, cost-cutting devices that have proved their efficiency and are really necessary to a properly equipped truck, is included in the Commerce Truck when you buy it!

LEADING DEALERS ALL OVER THE COUNTRY are selling Commerce Trucks with ease and satisfaction. They have no rivals in completeness of make-up.

EQUAL TO THE MOST DISTINGUISHED of its competitors in every other respect, the Commerce Truck is vastly superior in point of up-to-the-minute equipment.

NEXT YEAR—AND THE YEAR AFTER—OTHER TRUCKS will follow suit—many are already preparing to do so—but the Commerce has the big jump on them all.

THE COMMERCE HAS DONE IT ALREADY AND IS NOW—TODAY—prepared to go right to work for its owner with all these necessary details of equipment an integral part of the truck itself—included in the purchase price.

WHY NOT BUY A WHOLE TRUCK—at once!

DEALERS:

Sell your customers a real 1918 Model and get the cream of the trade. We give you a square deal and the shortest, most easily understood contract agreement you ever saw.

LOOK AT THESE!

Complete Equipment
Three types of bodies
A windshield
Remy Starting and Lighting
A Spotlight
A Bumper (integral with frame)
Large Searchlights (with dimmers)
Stewart Vacuum System
Pierce Automatic Governor

Quality Units
Continental Motor
Torbensen Internal Gear Rear Axle
Cast Tank Radiator with Removable Core
Truck Type Roller Bearing Front Axle
Unit Transmission, Special Truck Type
Detroit Steel Products Company Springs

These, together with special truck frame and fittings such as are usually found in a truck of 2 tons capacity, are the principal units that enter into the construction of the "Model ES" Commerce 1-ton Truck.

¾-Ton Model, $975. Supplied with 3 types of bodies.

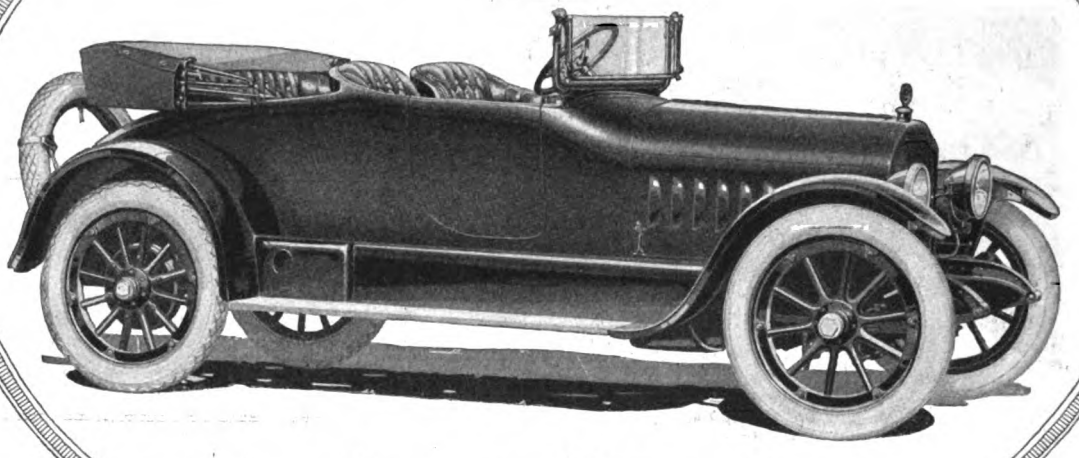
Commerce Motor Car Company
DETROIT **MICHIGAN**

W. H. Brinkerhoff, Eastern District Manager, Belmont Avenue, Elmhurst, Long Island, N. Y.

Digitized by Google

Peerless Eight

Peerless
All that the name implies



Two Separate Power Ranges

The Peerless Dealer's Big Advantage

Everyone wants a really fine car—but few feel that they can afford an expensive car and a heavy operating cost.

The Peerless Eighty Horsepower Eight is recognized universally as one of the few really fine cars—yet it is not an expensive car.

And it is distinctly one of the very few truly great cars.

The Peerless dealer gives an irresistible demonstration.

The Peerless Double Power Range is as fascinating as it is practical.

It captivates the most indifferent prospective driver—makes driving a delight for even those who think they have had every motoring thrill.

And when a prospective buyer appreciates the combination of economical operation with extravagant performance—it's a sale.

Its wonderful softness, quietness and flexibility in its "loafing" range—its dash, speed and super-power in its "sporting" range give the Peerless a contrasting performance—a dual personality—which completely captivates.

Can you think of any car with such big outstanding selling advantages?

Do you know that the success of this car has led us to double our production?

Are we represented in your vicinity?

Would you like to have a car to sell that is different and better, demonstrably so?

Write us about it.

Prices

On orders accepted by the Factory for shipment, until February 28th, 1917, Roadster, $1890; Touring, $1890; Sporting Roadster, $2250; Coupe, $2700; Sedan, $2750; Limousine, $3260

On orders accepted by the Factory for shipment, after February 28th, 1917, Roadster, $1980; Touring, $1980; Sporting Roadster, $2250; Coupe, $2700; Sedan, $2840; Limousine, $3350

All prices f. o. b. Cleveland are subject to change without notice

The Peerless Motor Car Company, Cleveland, Ohio

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Always on "High"

In the Mountains or on the Avenue

STANDARD

The Magneto Equipped "Eight"

Brute force and Beau Brummel blent into one—with distinction in every inch of its fleet wedge of a body.

That, plus perfect obedience, so that a woman drives with ease.

This powerful magneto-equipped Standard "8" is ready always for sharp grades and rough going. Trials that grind less rugged cars into submission are a frolic for this impetuous, eight-lunged, ruly beast of a car.

You will be keenly grateful for this strong car's frame and springs, where steel-making at its level best guarantees your security and your comfort.

You'll find its rugged 127 inches of wheel-base superior to all emergencies of strain and stress.

Cabinet-size photographs, full specifications, and details of our new sales plan will be furnished upon request. Applications for unoccupied territory will receive prompt attention.

80 H.P.—127 inch wheel-base—optional upholstery and color

Springfield Sedan	**$2500**	**7-Passenger Touring**	**$2000**
Limousine	**$3500**	**4-Passenger Roadster**	**$1950**

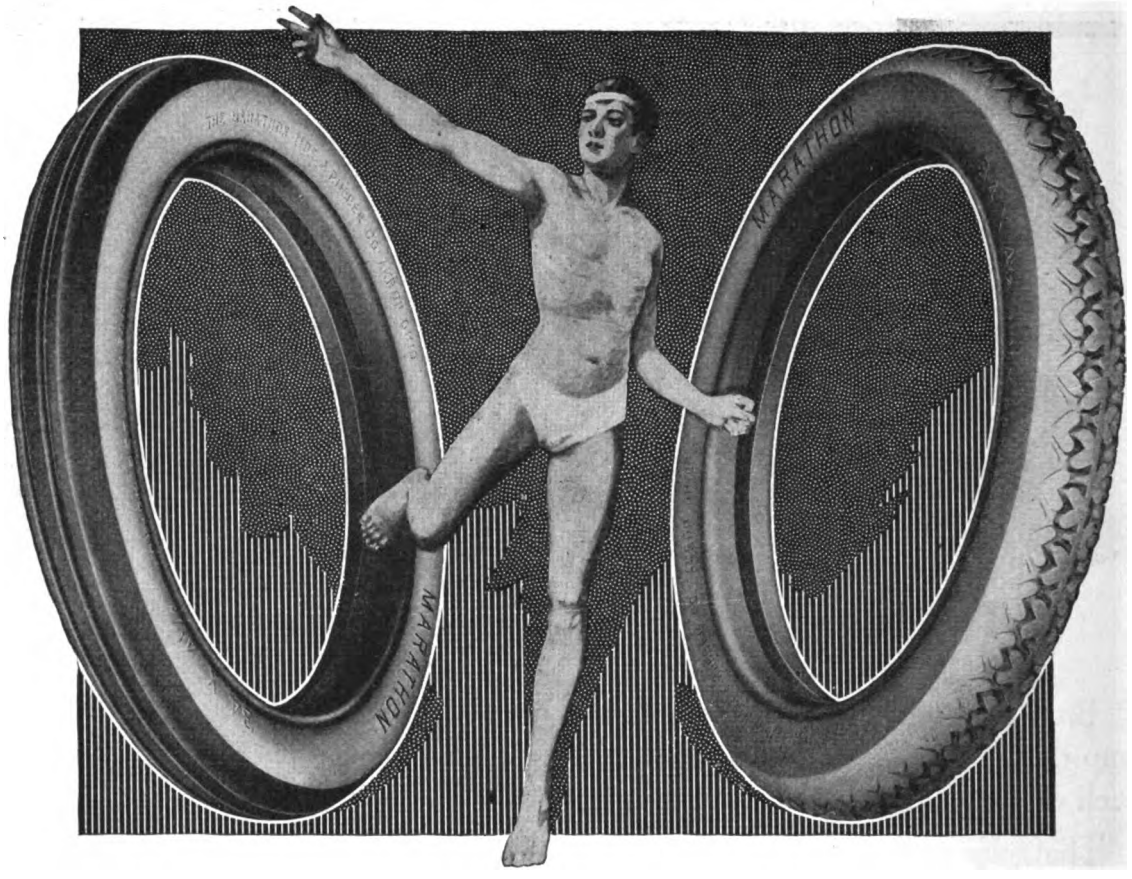
F. O. B. Butler, Pa.

STANDARD STEEL CAR COMPANY
Pittsburgh, Pa.



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SPEED and ENDURANCE

Built to meet the demand for Quality, Marathon Tires excel in Speed and Endurance

Speed—because lively, resilient rubber absorbs irregularities of the road instead of lifting the car over them; and the Angle Tread grips the road with positive traction.

Endurance—because Marathons are built the careful way, *by hand*, of the best materials that the industry knows—to give thousands of miles more service than their liberal 5000-mile guarantee.

TIRE DEALERS! Get Marathon Speed and Endurance back of your tire business. Write for our Proposition of exclusive territory and sales support.

THE MARATHON TIRE & RUBBER CO , CUYAHOGA FALLS, OHIO

CANADIAN PLANT: ST. CATHARINES, ONTARIO

SPEED
MARATHON
ENDURANCE

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OUR displays at the National Automobile Shows best reflect the conscientious manufacture of our Giant line of Electrical Devices.
Our wide range of equipment is an assurance of the most comprehensive ignition service available at our branch houses throughout the country.

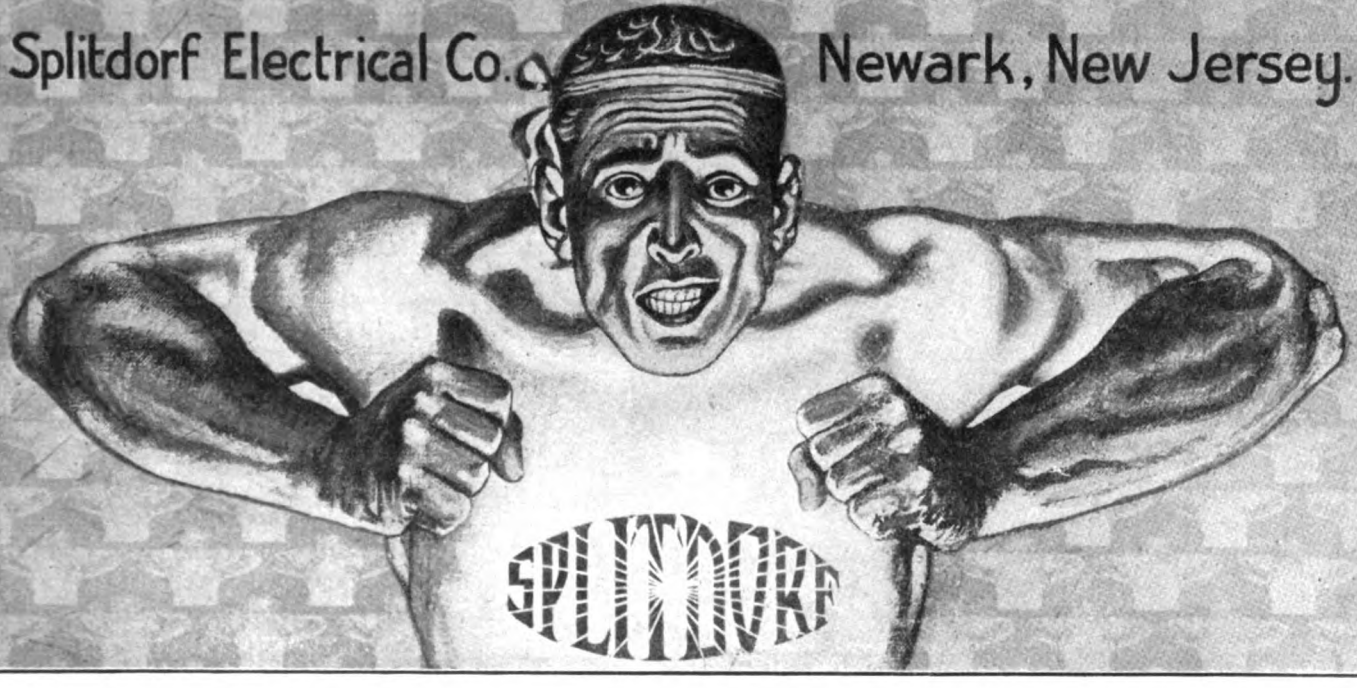
DIXIE 20TH CENTURY MAGNETO

Lighting and Starting Systems

The Plug with the Green Jacket

AMMETERS

Splitdorf Electrical Co. Newark, New Jersey.



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Firestone



Motor Car Snow Shoes

OVER deep snow and slushy roads Firestone Tires carry your car with maximum ease of going. They are steady, safe and sure.

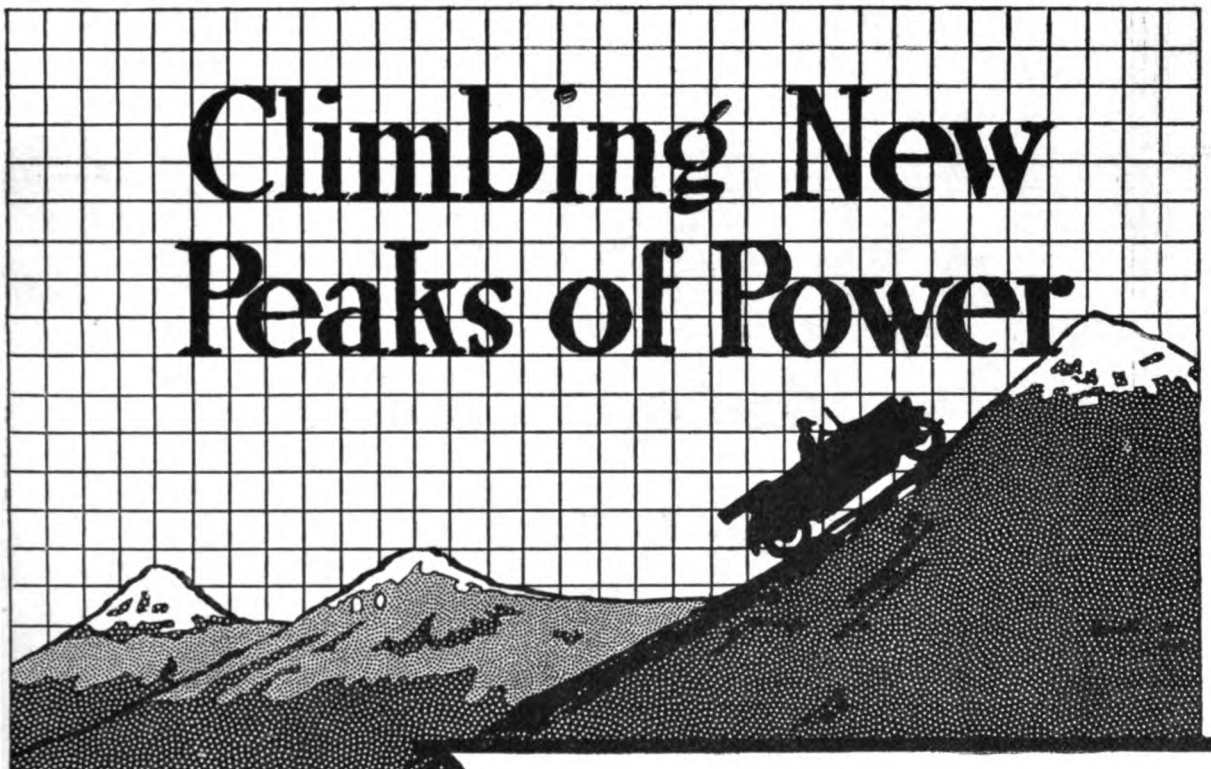
The quality of rubber in the Firestone Non-Skid tread insures a firm grip, good traction and long added wear.

And this matchless Firestone quality is yours at prices charged for ordinary tires. This saving is possible only because of methods and machinery highly efficient and modernized up to the minute. Also because of enormous output, and wide distribution expertly and economically handled. For safety and saving in the highest degree, ask your dealer for Firestone equipment.

FIRESTONE TIRE & RUBBER CO.
Akron, O. Branches and Dealers Everywhere

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Climbing New Peaks of Power



As the result of introducing overhead valves into a V-Type motor and adding other features of design, Ferro V-Type motors produce more power per cubic inch of piston displacement or per pound of weight than any other standard poppet valve motors.

This, of course, means more than power-production alone. It means exceptional flexibility.

The horsepower per cubic inch of piston displacement of the four Ferro models is as follows:—

Model 8-35	.218 h. p.	Model 8-60	.225 h. p.
Model 8-48	.242 h. p.	Model 12-80	.228 h. p.

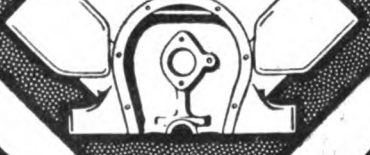
To remarkable power development and flexibility Ferro V-Type motors add unusual accessibility, freedom from vibration and low up-keep cost.

Write for full information.

THE FERRO MACHINE & FOUNDRY CO.
198-S Hubbard Avenue Cleveland, Ohio

FERRO MOTORS

Reg. U.S. Pat. Off.



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ARMLEDER Motor Trucks

A Quick Success in a New Territory

Until a few months ago, Armleder Motor Trucks were entirely unknown in the Philadelphia territory. But the trucks sold from the start when the Adler-Armleder Company, 1426 Fairmount Avenue, was formed.

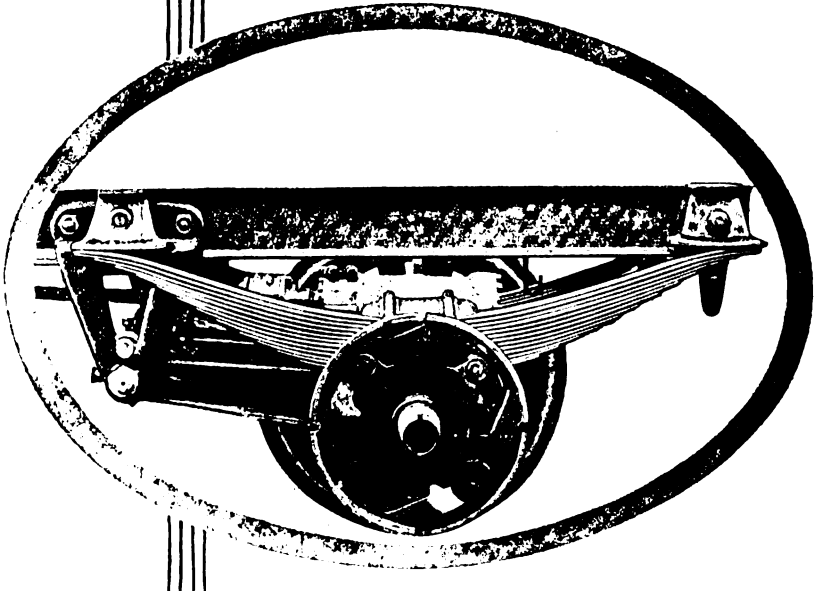
Distinctive features of design, obvious quality, made the first sales. Owners helped to sell other Armleders. Service expense has been unusually low for the dealers.

"Our profits have been so satisfactory that we have decided to abandon other lines and concentrate on trucks as exclusive Armleder dealers," says Manager C. I. Adler. "We are moving into larger quarters and are about to push the business in a big way."

There may be an Armleder opportunity like this in your territory. Write to-day for all the facts.

THE O. ARMLEDER COMPANY

Twelfth, Plum and Charles Streets Cincinnati, O.

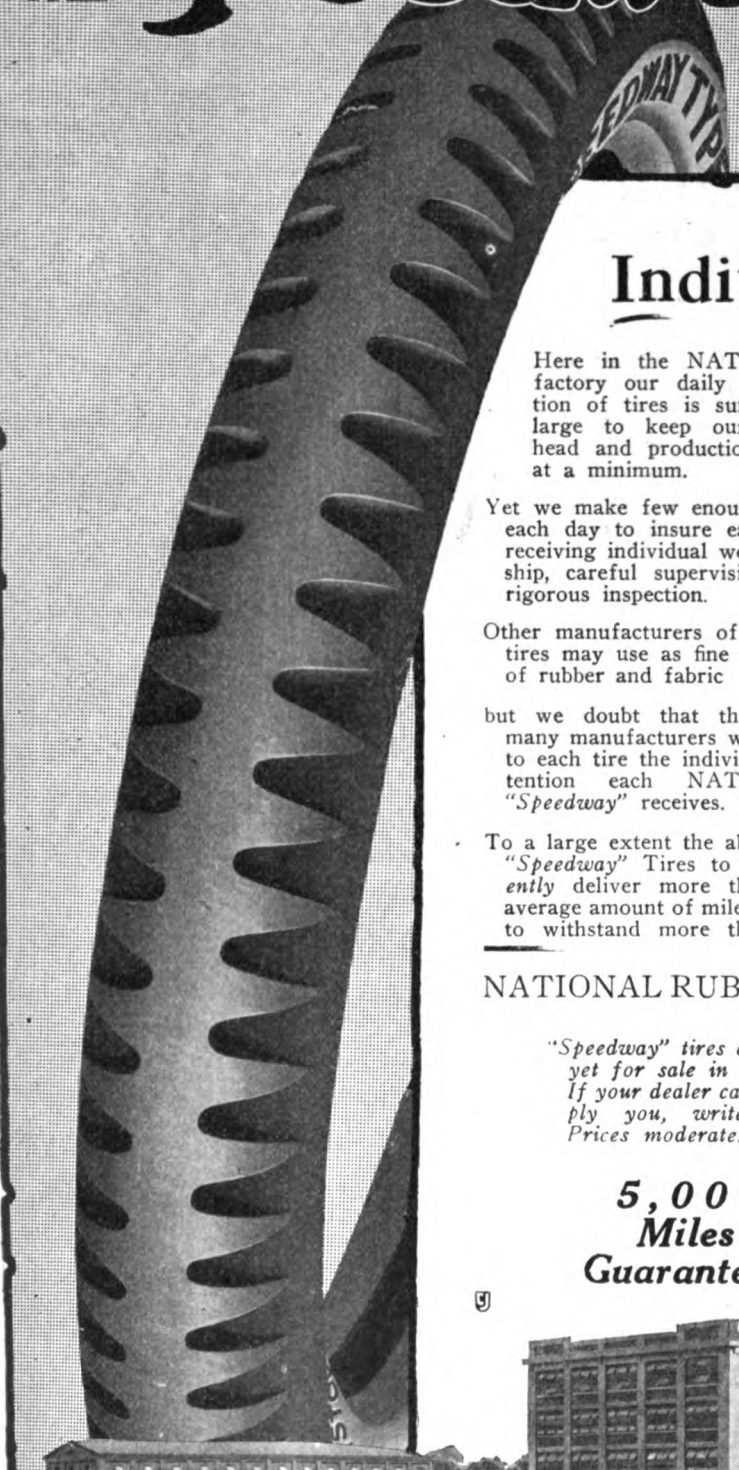


Two-ton
Worm Drive
Three-and-a-half-ton

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National Speedway Tires

Made in POTTSTOWN, PENNA.



Individually Built

Here in the NATIONAL factory our daily production of tires is sufficiently large to keep our overhead and production costs at a minimum.

Yet we make few enough tires each day to insure each tire receiving individual workmanship, careful supervision and rigorous inspection.

Other manufacturers of *quality* tires may use as fine a grade of rubber and fabric

but we doubt that there are many manufacturers who give to each tire the individual attention each NATIONAL *"Speedway"* receives.

To a large extent the ability of *"Speedway"* Tires to *consistently* deliver more than the average amount of mileage and to withstand more than the average amount of punishment is due to this extra care exercised in their manufacture.

For quality, stamina, strength and general dependability just test a NATIONAL *"Speedway"* against the tires you are now using.

Dealers—Jobbers

Our plan of co-operating with *and protecting* the dealer in his territory has resulted in a bigger business for more than one tire distributor.

If you have not yet contracted for your next season's supply of tires, find out more about the NATIONAL proposition.

A letter from you will immediately bring complete personal information.

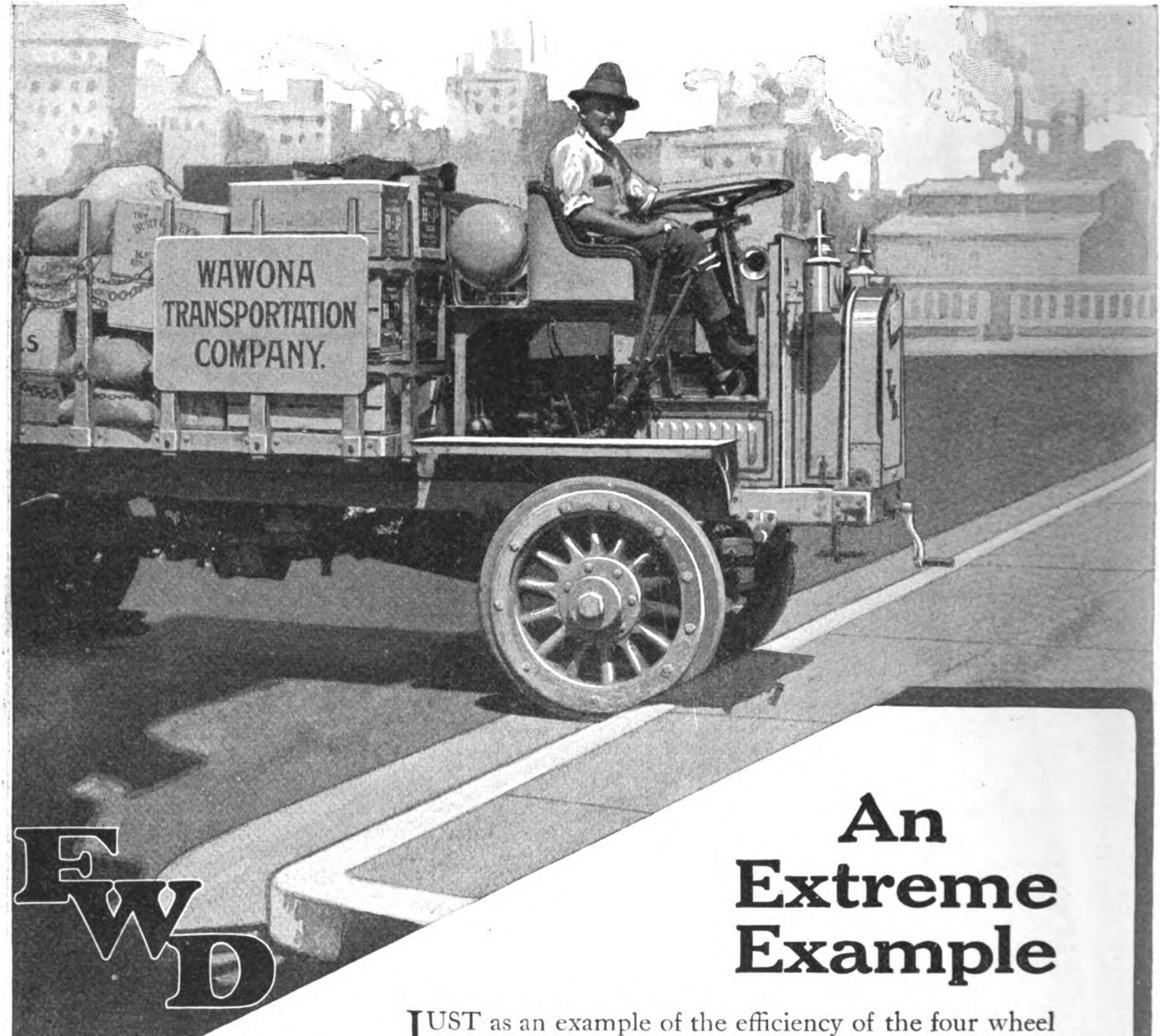
NATIONAL RUBBER COMPANY, Pottstown, Pa.

"Speedway" tires are not as yet for sale in all cities. If your dealer cannot supply you, write direct. Prices moderate.

5,000 Miles Guaranteed



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F W D

An Extreme Example

JUST as an example of the efficiency of the four wheel drive principle as applied in F-W-D Trucks—imagine a truck in the position illustrated above, with the front wheels against the curb. If it were a rear drive truck it would require a great effort of power to push the front wheels up the curb.

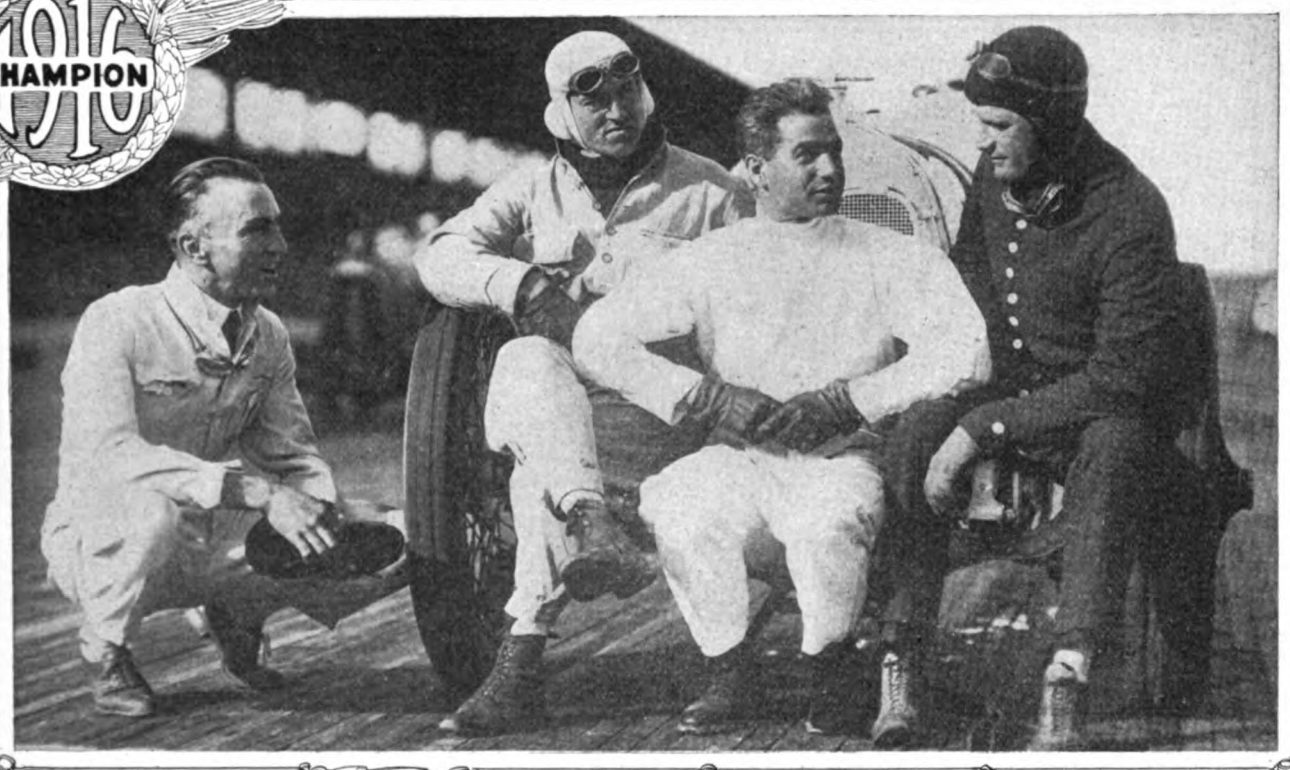
Now think what would happen when there is power in the front wheels. They would lift themselves over the obstruction with little effort. This is an extreme case to show what takes place continually on ordinary roads.

In the F-W-D Truck the rear wheels do not push the dead-weight on the front wheels over ruts and obstructions—the front wheels lift themselves and do their share of the pulling. This means saving of power, saving of fuel and saving of money. Demonstrations like this easily convince any business man of the dependability of F-W-D Trucks.

Dealers who desire to build up a permanent business with customers who buy a truck for its investment value will be considered in open territories. To such we'll gladly send details of our agreement, prices, discounts and terms.

Four Wheel Drive Auto Co., Dept. P Clintonville, Wis.

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E.V. Rickenbacher | Dario Resta | Ralph De Palma | John Aitken

They All Used Bosch Magneto Ignition

THE Champion, Dario Resta and all of the drivers carrying high scores in the 1916 Championship contest won their laurels with Bosch Ignition.

EVERY MOTOR CAR RACE of importance run during last year has been won by a car using a Bosch Magneto for ignition. Practically every big race run for the past six or seven years has been won by a Bosch-Equipt car.

Why?—because merely a spark in the cylinder would not satisfy the exacting drivers—because the manufacturers of the cars they drove could not take a chance.

Final Standing *of the* Drivers

Driver	Score	Ignition
Dario Resta	4100	Used Bosch
John Aitken	3440	Used Bosch
E. V. Rickenbacher	2910	Used Bosch
Ralph De Palma	1790	Used Bosch
Earl Cooper	1405	Used Bosch
Wilbur D'Alene	1120	Used Bosch
Thomas Milton	690	Used Bosch
Pete Henderson	667	Used Bosch
Frank Galvin	645	Used Bosch
Ralph Mulford	620	Used Bosch
Howard Wilcox	618	Used Bosch
Josef Christiaens	540	Used Bosch
Dave Lewis	500	Used Bosch



The Bosch Trophy

While they wanted the utmost in speed from their engines, they desired reliability first—that is an important reason why most races, whether for motor cars, motor boats or motor cycles, are won by engines using Bosch Magneto Ignition—Bosch Ignition is reliable ignition, its spark is always present when wanted.

These plain facts are good proof why the Bosch Magneto is superior to other forms of ignition. The test by racing is severe and grueling, and Bosch Magnetos always come through without a falter, but the CLIMAX of PROOF lies not in the continuous demonstration of Bosch Magneto superiority in contests, but in the fact that there are more than

Two Million Bosch Magnetos in Use

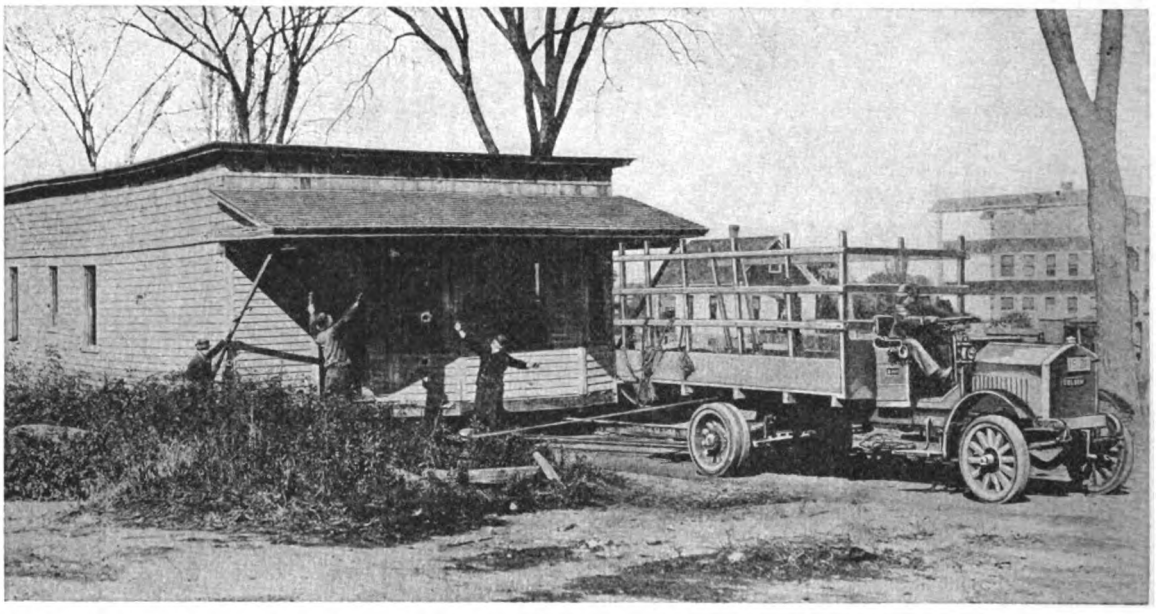
Correspondence Invited

Bosch Magneto Co.

224 W. 46th St., New York

Chicago Detroit
San Francisco Toronto

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NEAR Bridgeport, Conn., several old buildings occupied sites that interfered with the upbuilding of the new Remington City.

The trucking firm of Coleman & Tracy moved these buildings to another part of the town with one of their big

SELDEN TRUCKS

in record time and at an amazingly low cost.

The accompanying photograph shows Coleman & Tracy's Model N 3½ Ton Selden Truck doing the job.

The weight of the largest of the buildings—a five room house—was estimated at twenty tons—but, nevertheless, this big, powerful Selden Truck laid right against the rope and pulled the house steadily over the beams, without the aid of rollers, at a rate of speed that, as the Bridgeport Post expressed it, "made the spectators gasp with astonishment."

Dealers: Some day, not very far off, Selden territory will all be closed. We shall have to refuse many a good dealer the opportunity to represent us in his field. Applications for territory are pouring in fast from all sections of the country. Before long we will have all the live, hustling, dependable dealers we want. Why wait until that time, when it will be too late? If you want to build up a profitable truck business, write for our new Liberal Dealer Proposition at once.

Selden Truck Sales Co.

Rochester, N. Y., U. S. A.

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AUTOMATIC IGNITION CONNECTICUT



Look For It—

This device appears on the ignition control button of the Automatic Switch and identifies CONNECTICUT AUTOMATIC IGNITION.

This, primarily, is the purpose of this device, but when you learn that the Automatic Switch not only is essential to complete design but provides the only safe means of attaining unqualified ignition efficiency, then this device becomes a mark well worth looking for on the cars you are interested in.

CONNECTICUT TELEPHONE & ELECTRIC COMPANY
Meriden Conn.

When writing advertisers please mention Motor World

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Interchangeable—

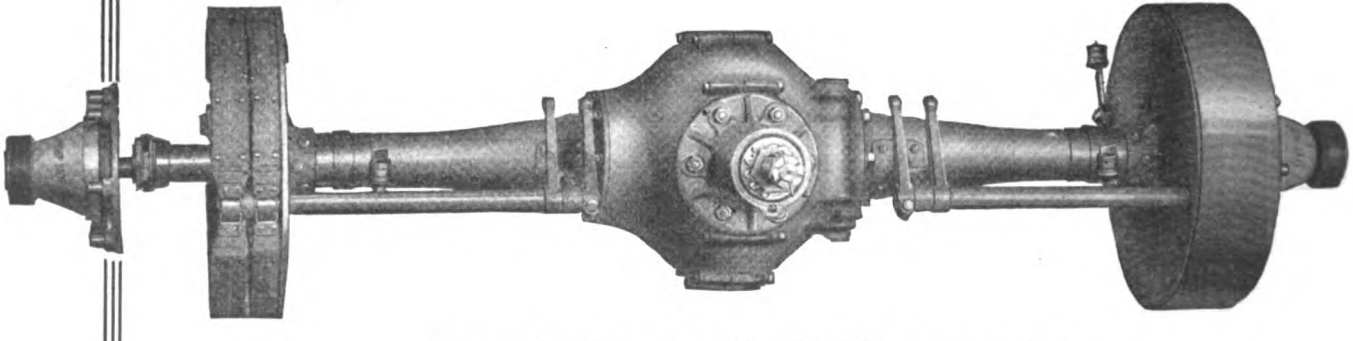
American Axles

for Wire or Artillery Wheels

WE can furnish this **"American"** Axle with Driving Flanges or Inner Hubs for Artillery Wheels, Houk Wire Wheels or Hayes Wire Wheels. Such Inner Hubs must be specified.

This Axle embodies the latest **"American"** improvements including pressed steel brake shoes; wide service brakes and narrow emergency brakes; full floating features; Bock taper roller bearings:—

Less Weight and Greatest Possible Efficiency



Licensed under The Kardo Company Patents

The American Ball-Bearing Co.

Pioneer Axle Builders of America

Cleveland, Ohio

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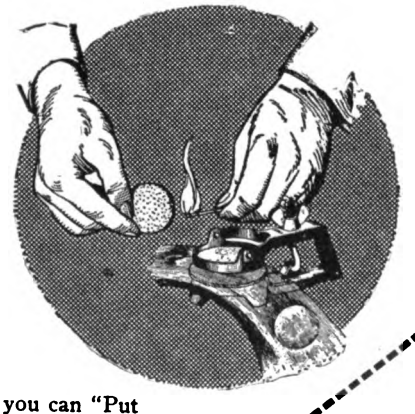
Free Window Display Material

100% SELLING EFFICIENCY

Saturday Evening Post Full Page

This full page advertisement in THE SATURDAY EVENING POST—issue of January 27th—will tell every car owner in your territory about the Marvel Jr. Vulcanizer and other Marvel Accessories—will tell them to buy from you. It's the biggest opportunity to boost your winter business ever offered. Nearly a quarter million have been sold—thousands have been waiting to buy the

MARVEL JR. VULCANIZER





Get ready now to swing in on this ready-created demand—let your customers know you can supply them. Your jobber will send you this window display *free* on your request. With your order for a dozen Marvel Juniors he will give you 18 patches and 18 chemicalized discs *free* to show your customers you can "Put on a patch easy as you light a match."

Send this coupon to your jobber today. Put in the window display—paste the Post ad on the window—push every Marvel Accessory in the line.

The Marvel Accessories Mfg. Co.
7275 St. Clair Ave., Cleveland, Ohio

Send us the following material at once:

☐ Window Display, *Free.*

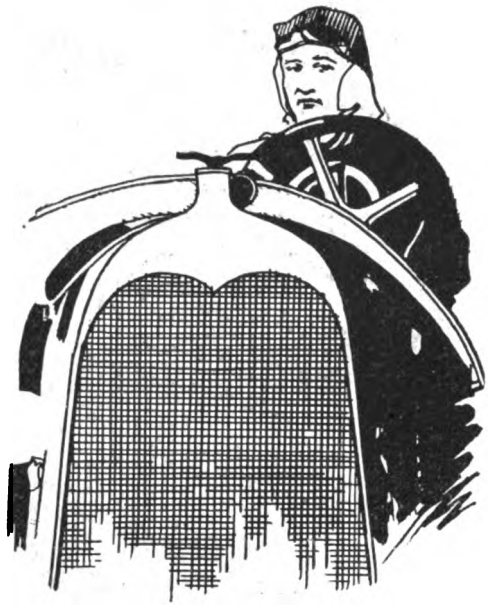
☐ 18 patches—18 chemicalized discs. *Free.*

☐ Enter our order for 1 doz. (or more..) Marvel Jr. Vulcanizers.

Name .....
Address .....

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VICTORIES



Nothing demonstrates the position of FEDDERS Radiators in the American automobile game more clearly than the results of the races. Taking the racing results since mid-summer, we want to call your attention to the performance of cars equipped with

FEDDERS RADIATORS

Here is a résumé of the Fedders' racing record for 1916.

Thirteen "firsts" out of twenty-seven officially sanctioned events. Forty-two "places" finished—and no Fedders-Equipt car was delayed at any time or forced to withdraw on account of cooling trouble.

1916 FEDDERS VICTORIES

CONEY ISLAND CUP RACE, 20 MILES, NEW YORK, MAY 13.

Car and Driver	Finish
Maxwell—Rickenbacher	4
Maxwell—Henderson	5

METROPOLITAN TROPHY RACE, 150 MILES, NEW YORK, MAY 13

Maxwell—Rickenbacher	1

INDIANAPOLIS INTERNATIONAL SWEEPSTAKES, 300 MILES, MAY 30

Maxwell—Henderson	6
Premier—Wilcox	7

DES MOINES 150-MILE RACE, JUNE 24

Maxwell—Henderson	2
Maxwell—Rickenbacher	3
Stutz—Cooper	5

SIOUX CITY 10-MILE RACE, JULY 8

Premier—Wilcox	4

SIOUX CITY 20-MILE RACE, JULY 8

Premier—Wilcox	1

SIOUX CITY 50-MILE RACE, JULY 8

Premier—Wilcox	1

OMAHA 50-MILE RACE, JULY 15

Maxwell—Rickenbacher	2
Maxwell—Henderson	3

OMAHA 150-MILE RACE, JULY 15

Maxwell—Henderson	4

TACOMA MONTAMARATHON, 300 MILES, AUG. 5

Maxwell—Rickenbacher	1
Maxwell—Henderson	5

CINCINNATI DERBY, 300 MILES, SEPT. 4

Peugeot, Aitken	1

INDIANAPOLIS 20-MILE RACE, SEPT. 9

Peugeot, Aitken	1
Premier, Wilcox	2

INDIANAPOLIS 50-MILE RACE, SEPT. 9

Peugeot—Aitken	1
Premier—Lewis	5

INDIANAPOLIS 100-MILE RACE, SEPT. 9

Peugeot—Aitken	1
Premier—Lewis	5
Maxwell—Henderson	7

ASTOR CUP RACE, 250 MILES, NEW YORK, SEPT. 30

Peugeot, Aitken	1
Maxwell—Rickenbacher	2

GRAND AMERICAN, 250 MILES, CHICAGO, OCT. 14

Peugeot—Resta	1
Peugeot—Aitken	2
Maxwell—Rickenbacher	3
Premier—Lewis	4
Maxwell—Henderson	5
Premier—Galvin	6

HARKNESS TROPHY RACE, 100 MILES, NEW YORK

Peugeot—Aitken	1
Premier—Galvin	2
Peugeot—Wilcox	3
Maxwell—Henderson	4

VANDERBILT CUP RACE, 294 MILES, SANTA MONICA, CAL., NOV. 16

Peugeot—Resta	1
Stutz—Cooper	2

GRAND PRIZE RACE, 403 MILES, SANTA MONICA, CAL., NOV. 18

Peugeot—Aitken-Wilcox	1
Stutz—Cooper	2

ASCOT DERBY, 150 MILES, LOS ANGELES, CAL., NOV. 30

Stutz—Cooper	2

UNIVERSAL TROPHY RACE, 112 MILES, UNIONTOWN, PA.

Premier—Lewis	2

This showing proves that the FEDDERS is still in its place as the foremost American Radiator.

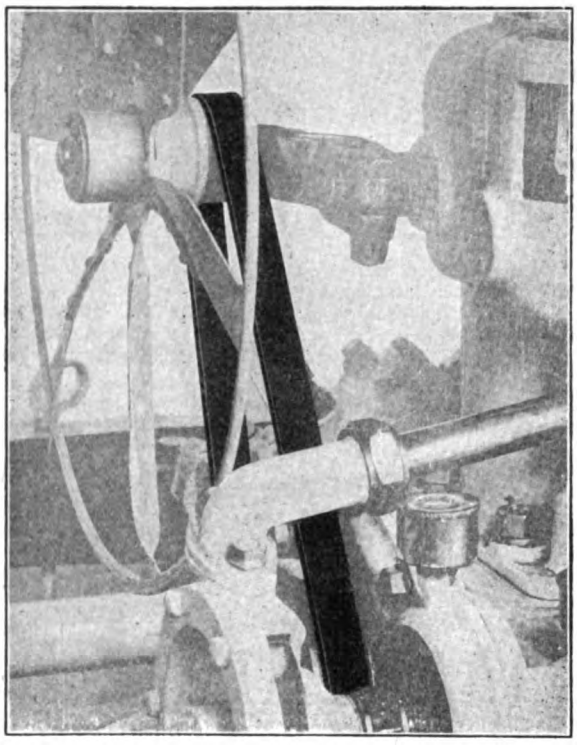
FEDDERS MANUFACTURING CO., INC.

BUFFALO, N. Y.

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Leather Parts that Deliver the Goods!

Wetpruf Fan Belts and Cone Clutch Facings. Solid and Laminated "V" Belts, "Flat" Fan Belting.



Generator Coupling Leathers, Universal Joint Boots, Knuckle Boots, Washers, Discs, etc.

ABOVE you see in action a famous Wetpruf Fan Belt—one of the many dependable leather automobile parts, (such as Cone Clutch Facings, Solid "V" and Flat Fan Belts, Generator Coupling Leathers, Univeral Joint Boots, Knuckle Boots, Leather Washers, etc., etc.) made by this company.

Practically 75% of all such leather parts used in the manufacture of automobiles today are of our manufacture.

The Wetpruf Fan Belt shown above is guaranteed to withstand water, heat and oil, and to give the best of service.

Dealers! Parts that have met for years the rigid tests of car makers are sure to satisfy your customers. Write for our profit-making proposition.

Write today for samples and prices of Wetpruf belts and other dependable leather parts.

HIDE, LEATHER & BELTING CO.

227-D SOUTH MERIDIAN STREET, INDIANAPOLIS, IND.

Detroit Office: 406 Kerr Building. - - - - - - - - - W. C. DuComb, Jr., Special Representative

WRITE Ask us about LEATHERTEX—the new facing for cone clutches that is more resilient than all-leather, more durable than all-leather, more available than all-leather and *cheaper* than all-leather.

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Keep Your Profits Up this Winter by Repairing Tires

Vulcanizing is the big profit end of the garage business all the year round. Tires represent the main item of the motorist's expense and tire repairing is the biggest source of revenue to the wise garage owner who is equipped to handle the work. Especially in the winter is this so, because of the extra wear and tear on tires due to bad weather, poor roads and the use of chains.

The garage that is not vulcanizing tires is losing money. Every car has at least eight tires per year and they need repairs very often. Why don't you get the work? You are the logical man to have it.

SHALER Vulcanizing Plant

You don't even have to go out and solicit business. All your storage patrons are prospective customers and they come to your garage every day. When these auto owners come to you for supplies, gasoline or oil, they will gladly give you their tire repair work. You can keep tab on their tires and remind them when vulcanizing is needed.

No need to go to school to learn to use a Shaler. Anybody who can clean or adjust a car can operate a Shaler because of the simplicity of Shaler Wrapped Tread Method and Automatic Heat Control.

This Shaler system has been used successfully by prominent tire makers for many years. The tires are never disfigured as by sectional repairs and the repair is made as strong as the tire itself because it becomes an integral part of the tires.

The Automatic Heat Control is an exclusive Shaler feature that keeps the temperature of the vulcanizer exactly at the right point without any watching or regulating. The vulcanizer can't possibly overheat a tire, the operator can use all of his time in preparing repairs because the vulcanizer doesn't need to be watched.

Mail the coupon and get the whole Shaler story and catalog.

C. A. SHALER CO., 449 Fourth St., Waupun, Wis.—*The Largest Manufacturers of Vulcanizers in the World*

Canadian Distributors: JOHN MILLEN & SONS, Ltd., Toronto, Winnipeg, Montreal, Quebec, Vancouver

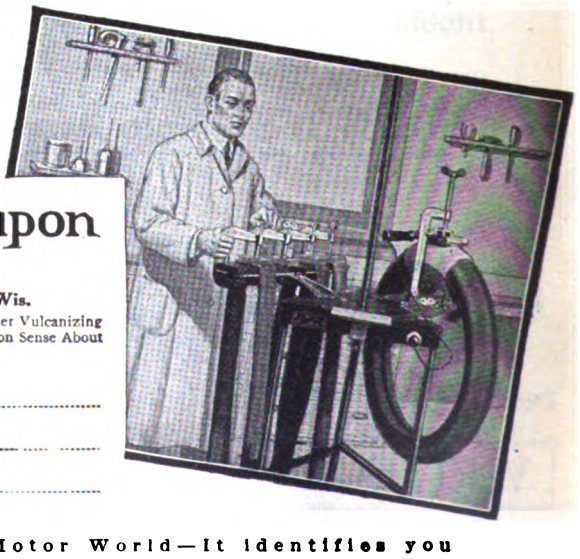
Nationally Advertised



$60.00

Steam or Electric

Subject to trade discount.



Mail this Coupon

C. A. Shaler Co.,
449 Fourth Street, Waupun, Wis.

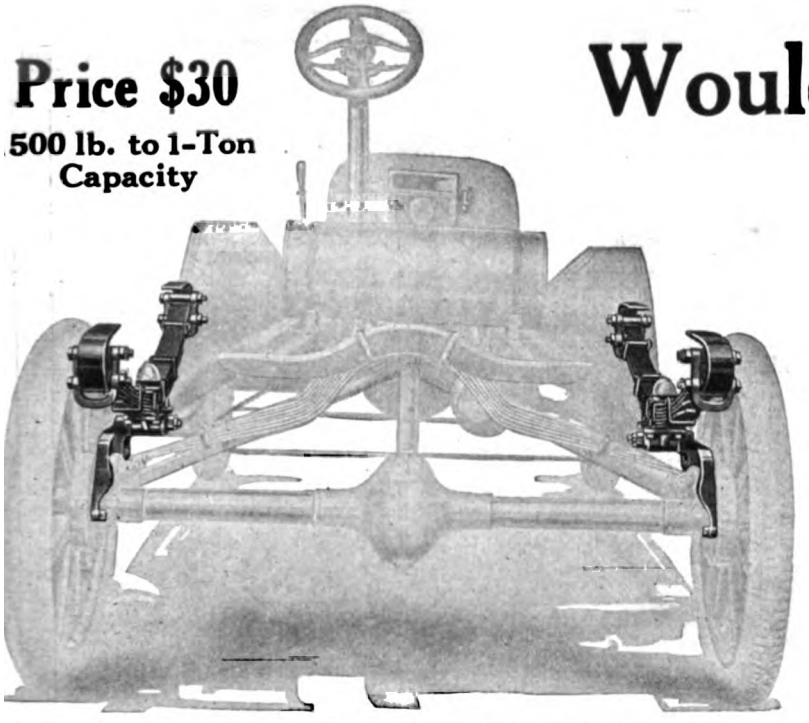
Please send me full particulars about Shaler Vulcanizing Plant, low discount price and book, "Common Sense About Tire Repairs."

Name .....

Address .....

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Price $30
500 lb. to 1-Ton Capacity



Would Saving $320 Out of $350 Make Any Difference To You ?

Put Yourself In Your Customers' Place

If **you** were going to buy a unit that would convert **your** Ford car into a one-ton truck—
And two dealers brought **you** two units that did the same thing—one complicated and slow on delivery, the other simple and ready for immediate delivery—one costing $350, the other **$30**—
Which would **you** buy?

The OLSON Unit Goes Big Everywhere

For just the same reason that **you** would buy an OLSON Unit, thousands of others would buy them **from** you. The saving of $320, without the loss of a single pound of carrying capacity, is an argument that can't be overlooked or set aside.

The season of biggest OLSON Unit sales is just approaching. Late in the winter and early in the spring Ford owners sell their old cars. Thousands of these are made into ton-trucks. Every one in your territory is a live prospect for an OLSON Unit sale.

It takes more than a day to make prospects into customers. It takes a little time to arrange for OLSON territory—because we are establishing a dealer in every territory where Ford cars run. That's why you should start **now** to prepare for big OLSON Unit business.

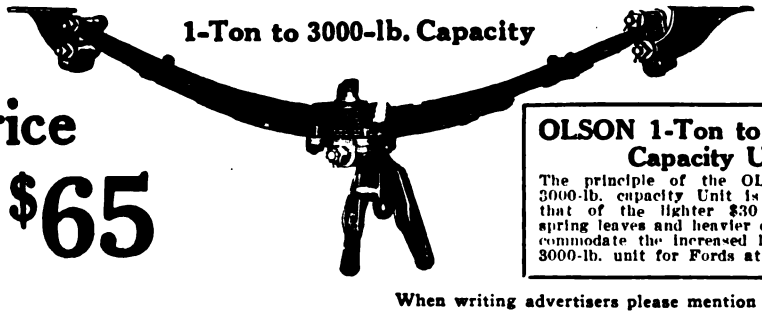
Write today for complete details of our agency proposition. You will find it extremely worth while. Get an OLSON Unit in your shop. Install it on a Ford chassis. Run it around town and through the country you represent. We'll furnish all the Units you sell, as fast as you sell them. No waits for OLSON deliveries. Only satisfied customers, coming fast, buying big service at a big saving—with liberal profits for you.

Ask any OLSON Unit dealer. Ask yourself what **you** would do.

Write or wire today for details.

1-Ton to 3000-lb. Capacity

Price $65



OLSON 1-Ton to 3000-Lb. Capacity Unit

The principle of the OLSON 1-ton to 3000-lb. capacity Unit is identical with that of the lighter $30 model. More spring leaves and heavier construction accommodate the increased load. The only 3000-lb. unit for Fords at $65.

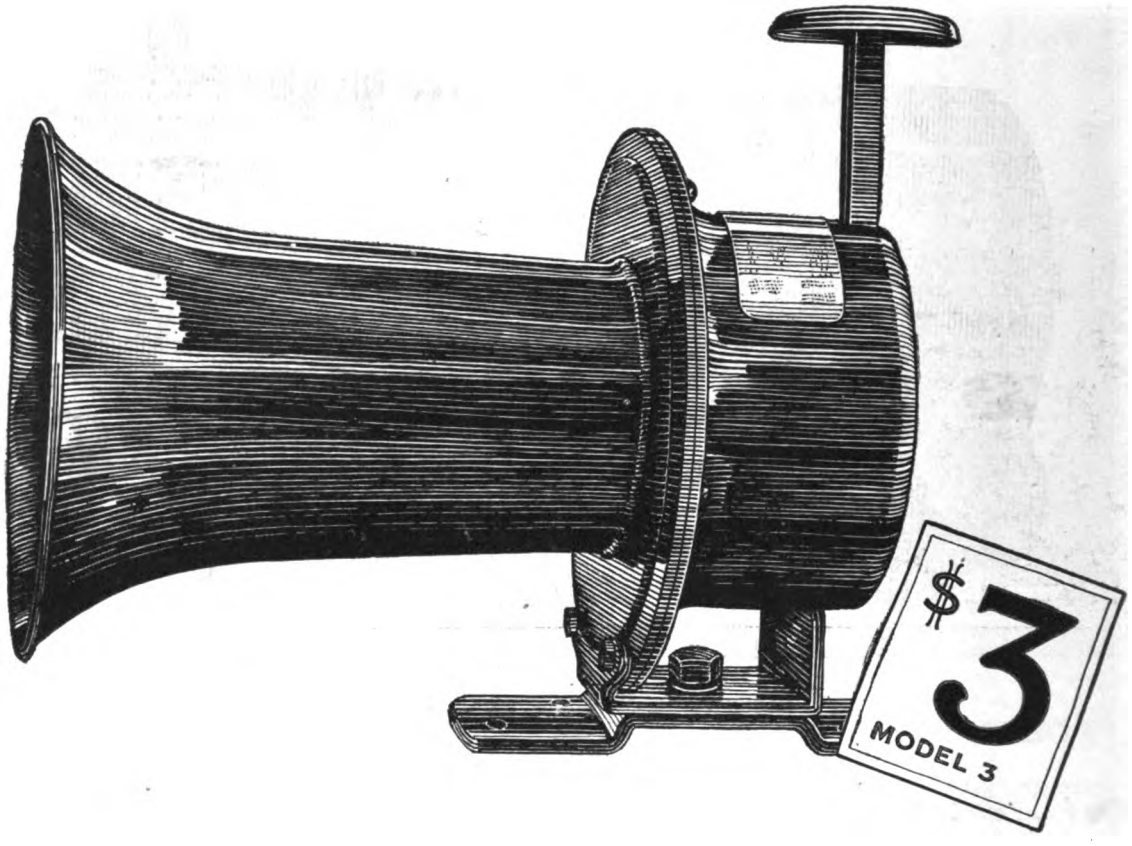
Swedish Crucible Steel Co.

Factories

Detroit, Mich., U. S. A., Windsor, Ont., Canada

Address Wheel Department

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LONG HORN

The Fastest, Surest Hand Horn

Speed! That's what you want in a horn.

Slow-acting horns are dangerous and unsatisfactory. When the occasion arises for a warning signal, a horn that shoots out a loud, clear signal *instantaneously* is what you want.

The Long Horn is built for speed. *It is the fastest hand horn in the world.* The instant you push down the easy-working plunger, the Long Horn shoots out a penetrating warning at the amazing speed of more than 925 miles an hour.

This speed advantage over other horns is due to the patented design invented by G. F. Long. This invention gives the Long Horn 35% to 50% additional speed.

Warns but doesn't offend

You operate the Long Horn the natural way—with a slight *downward* pressure.

You can't mistake the sound—that characteristic GR-R-R-R!

A horn of quality

Its quality is guaranteed by the fact that it is a product of the G. Piel Company, pioneers in the manufacture of hand operated warning signals.

Always ready for service

The Long Horn *always* warns, as its strong, simple mechanism is never out of order.

Model 3, the new Long Horn, sells for $3.

Dealers: Write for 1917 Proposition.

Manufacturers
THE G. PIEL CO., Inc.
Long Island City, N. Y.

Sales Department
EDWARD A. CASSIDY CO., Inc.
577 Foster Bldg., Madison Ave. & 40th St., New York

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G-P Muffler Cut-Out

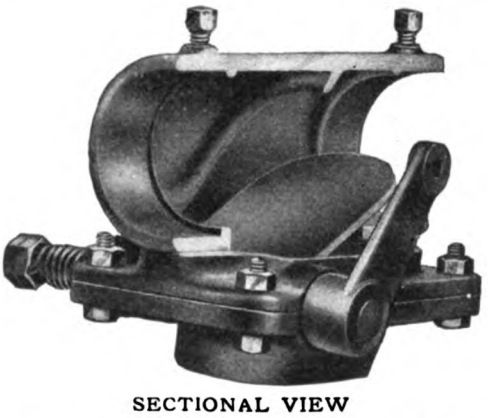
Tells The Motor's Secrets

You need a muffler cut-out that will not, when in operation, cause back pressure.

That *will* under all conditions afford your motor absolute relief.

That is designed so that carbon deposits cannot form and cause it to leak.

A cut-out whose relief is so complete that when your motor is put to the test of a long hard pull up a steep grade, this relief will aid the cooling system.



SECTIONAL VIEW

A cut-out that will accentuate the noise of the explosions to a degree that permits your distinguishing the functions of each cylinder. This is necessary because the modern multi-cylinder motor is practically noiseless.

Every miss means a cylinder full of gas wasted. Rather expensive today! To say nothing of the irreparable harm that may be done by running with one or more cylinders missing.

These features can only be found in the G-P Muffler Cut-Out.

Special Models for Packard and Ford

Special G-P Muffler Cut-Out for the Packard Twin-Six, the only one on the market. For Fords there is a special outfit consisting of G-P Muffler Cut-Out, Pedal and Chain.

Dealers: Write for 1917 Proposition

Manufacturers **THE G. PIEL CO., Inc.**
Long Island City, N. Y.

Sales Dept. **EDWARD A. CASSIDY CO., Inc.**
578 Foster Bldg., Madison Ave. & 40th St., New York

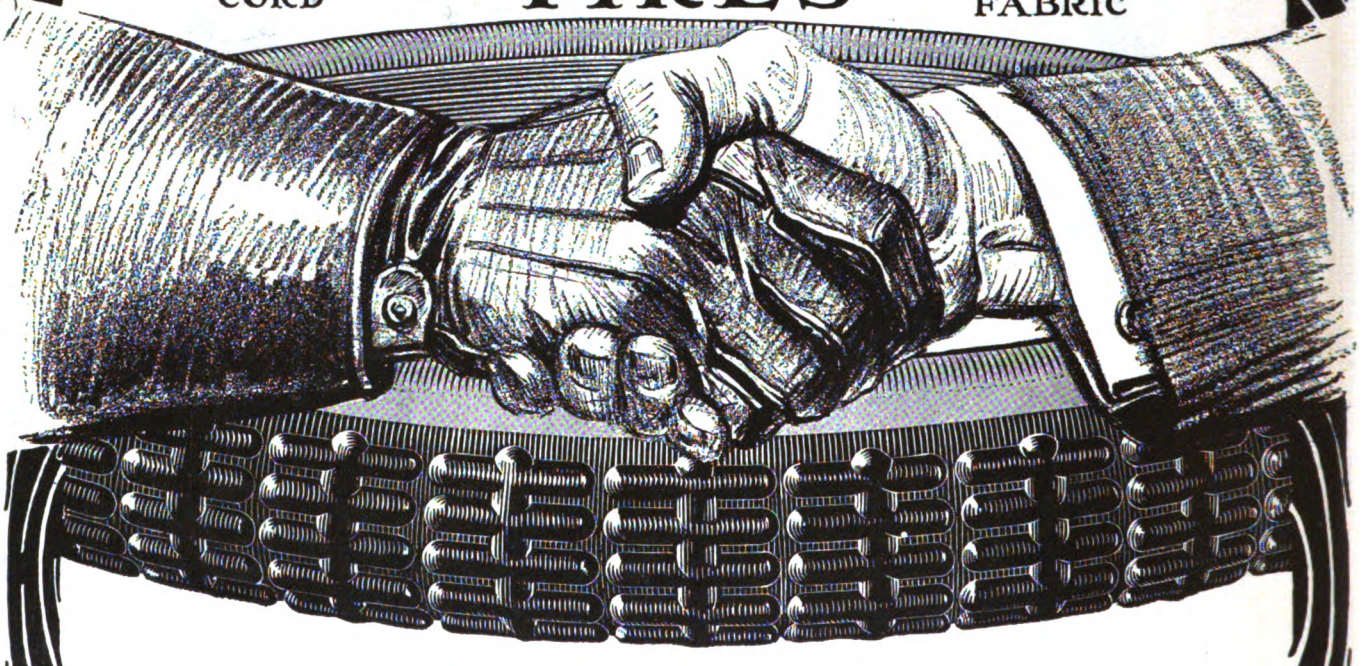
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FAIR LIST PRICES G FAIR TREATMENT
TRADE MARK

Hands across the TIRE

GOODRICH

SILVERTOWN CORD TIRES SAFETY-TREAD FABRIC



SQUARE and sound business dealing must be built on **good faith** and **good feeling** between **dealer** and **customer.**

The tire buyer who is forced to *bargain* and *battle* his way from one set of prices to a lower set—**false profit** prices to **true value** prices—leaves the store irritated and seldom comes back.

Where You See This Sign Goodrich Tires are Stocked

GOODRICH G TRADE MARK TIRES

Ask Your Dealer for Them

Hence one-price customers, the bulk and best of any trade, seek *known quality* at the *lowest price* with the NEAREST dealer in Goodrich Black Safety Tread Tires.

Because Goodrich Fair List prices *can not* be talked down and *need not* be, customers enter the store of a Goodrich dealer, sure of Goodrich quality and Goodrich prices; buy *quickly* without a minute of the dealer's time or an ounce of his effort lost in haggling, and leave confident the tires will render full service,—OR—

Goodrich Fair Treatment will square the account with generous adjustment. Furthermore, they **come back** to him for their NEXT tires.

Hence, the hands of dealer and customer clasp in mutual respect and **satisfaction** over the sale of Goodrich tires.

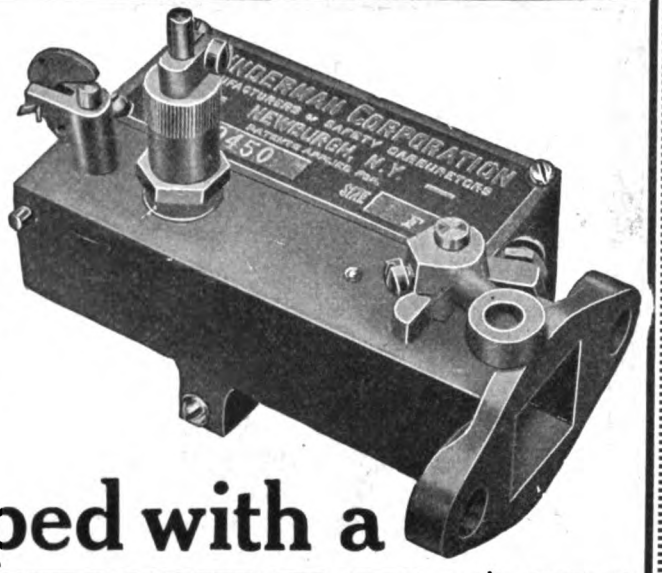
The B. F. Goodrich Company, *Akron, Ohio*

"Best in the Long Run"

When writing advertisers please mention Motor World

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There are 8 Simple, Compelling Reasons why every car should be equipped with a



$5 SUNDERMAN $5

Vacuum Carburetor

F. O. B. Newburgh

$6.50 with elbow for attachment where manifold is not cast in head. Ford and Metz cars do not need elbow

A Simple Instrument—Scientifically Exact—Unbelievably Economical

F. O. B. Newburgh

$6.50 with elbow for attachment where manifold is not cast in head. Ford and Metz cars do not need elbow

FIRST: It is positively supreme in its efficiency. That is, it delivers to the motor a pure, dry gas, a perfect mixture that puts the power of gasoline into an **explosion.** That means,

SECOND: More power from a given amount of gasoline. You give your motor all the gasoline it needs to get the power you require from your car. It takes **less** with a SUNDERMAN, which leads us to our

THIRD point, **Economy.** It saves from 25% to 50% in gasoline consumption on any car—much more on some cars.

FOURTH: Pick-up is quicker—acceleration easier.

FIFTH: It makes motors climb stunt hills on high that before were difficult to mount on second.

SIXTH: More speed. A claim that is being substantiated throughout the country on all makes of cars.

SEVENTH: Simplicity of mechanism. Less parts, less possibility of wear, and easy to understand by even a novice in driving.

EIGHTH: Price. Five dollars is the price, not to catch cheap trade, but because it represents a fair margin of profit on the cost to manufacture. Efficient working methods and cost-cutting devices make it possible.

Therefore:

CAR OWNERS:
Buy now and get the benefits at once. Be ready with your car's equipment when the season opens.

DEALERS:
There's a chance in your territory. Our advertising is creating the demand. Write now.

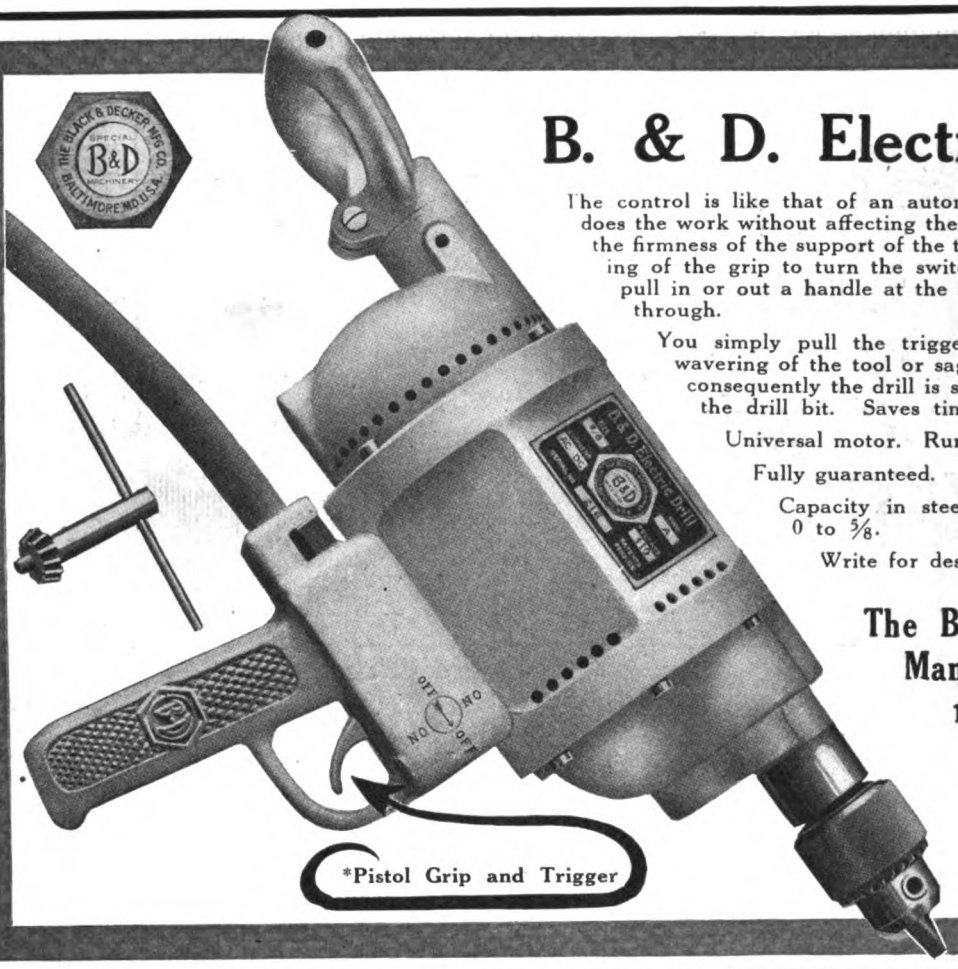
MANUFACTURERS:
Our proposition is made to order for you. Great engineers are convinced of our carburetor's superiority. Ask us to show you.

SUNDERMAN CORPORATION

9 Chambers Street, NEWBURGH, N. Y.

Western Sales Office: 403 Kresge Bldg., Detroit

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B. & D. Electric Drills

The control is like that of an automatic pistol—one finger does the work without affecting the steadiness of the aim or the firmness of the support of the tool. There is no releasing of the grip to turn the switch or press a button or pull in or out a handle at the moment the drill breaks through.

You simply pull the trigger without the slightest wavering of the tool or sagging of the weight, and consequently the drill is stopped without breaking the drill bit. Saves time, annoyance and loss.

Universal motor. Runs on any current.

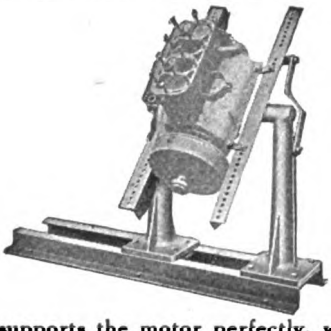
Fully guaranteed.

Capacity in steel: 0 to 3/8, 0 to 1/2, 0 to 5/8.

Write for descriptive literature.

The Black and Decker Manufacturing Co.

109 Calvert Street
Baltimore, Md.



THE MANLEY "EVERY WAY" ENGINE STAND

supports the motor perfectly, while allowing the workman to reach every portion of it with ease and accuracy.

The "Every Way" can be adjusted to every position in a circle—100 positions if desired—but the three most convenient are the Horizontal Position for working on valve mechanism and generally around the engine; the 45-degree Position (shown in cut) for cleaning carbon, grinding in valves, etc.; and the Inverted Position for taking up crankshaft, connecting rod, bearings, etc.

In each position the engine is locked rigidly by two side braces. The "Every Way" supports the engine solidly. It will never become shaky, and should last a lifetime without repairs.

For the Factory motor assembly department no other stand has been brought out that can be compared to the "Every Way for" efficiency and convenience.

The United Engine & Mfg. Co.

"Pioneers in Garage Equipment"

Hanover, Penn.

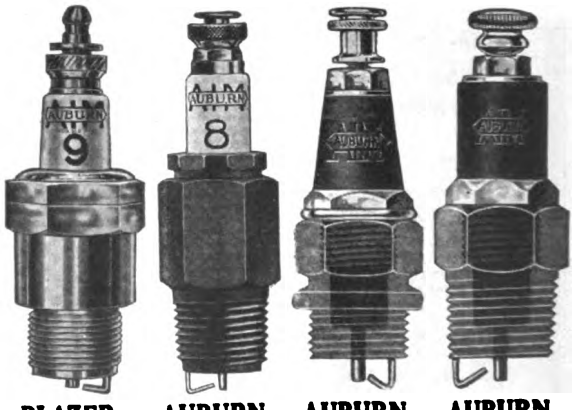
SPARK PLUGS AUBURN AIM REG. U.S. PAT. VALVE LIFTERS

LOOK FOR THE AIM BEHIND THE NAME

AUBURN VALVE LIFTER



Price 75 Cents Each



BLAZER Fiesite Insulation Price $1.00

AUBURN Porcelain 75 Cents

AUBURN Motorcycle Price $1.00

AUBURN Mica Price $1.00

Auburn Ignition Mfg. Co. AUBURN, N.Y. U. S. A.

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POVASCO STEERING WHEELS

An Urgent Need Simply Satisfied

A cramped driver's seat spoils the trip for the man who owns the car.

Wriggling in and wriggling out under the steering wheel will make any man wonder why he ever bought a car. If he wonders often enough he becomes an immediate prospect for a POVASCO Steering Wheel, for incorporated in this wheel is the simplest, surest and cleverest tilting device that has even been applied to a motor car. A pull of the knob and the wheel can be tilted forward or back in a plane absolutely parallel with the steering column, thereby giving easy entrance and easy exit to any driver, no matter how generous nature has been to him in the matter of a waist line.

This tilting feature, supreme in its field, combined with the moulded composition of all POVASCO wheels, makes this accessory not a luxury, but a satisfying necessity that car owners have long been looking for.

Another POVASCO model has the warm hand feature instead of the tilting device, and the POVASCO De Luxe (Model H) combines both the hand-heating and tilting features with the POVASCO construction in a way that makes a marvelous appeal to the comfort-loving motorist.

Every car owner who has had to squeegee himself past the steering wheel to get into the driver's seat; every car owner whose numbed fingers have robbed him of the pleasures of motoring for seven months of the year, and every car owner whose sense of the useful and the beautiful has been disturbed by the marring of the finish on his steering wheel—in fact, every car owner who wants the right thing in the way of a steering wheel should immediately find out how POVASCO wheels can help him.

Our beautiful booklet explains and illustrates in detail. Write for it at once. We will gladly send it to you.

Distributors of automobile trade experience and the willingness to put their energy behind the sale of these wheels are wanted in every territory. The profits are generous—the prospects innumerable.

Write now and ask us about it.

POUVAILSMITH CORPORATION

POUGHKEEPSIE **NEW YORK**

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This Is The Plug



These Are the Manufacturers Who Equip With AC

The Standard Spark Plug of America

Packard	Buick	Enger	McLaughlin (Canada)
Pierce-Arrow	Oakland	Lexington-Howard	Monroe
Cadillac	Old-smobile	Brockway Truck	Netco Trucks
Marmon	Jeffery	Chase Truck	Moreland Trucks
Hudson	Stearns-Knight	Daniels	Pilot
Chalmers	Saxon	Empire	Sayers-Scovil
Hupmobile	Stutz	Federal	Crane-Simplex
Chandler	National	G. M. C.	Singer
Haynes	Velie	GrammTrucks	Stephens
Chevrolet	Jackson	Kissel Kar	United Truck
Dort	Apperson	Palmer-Moore	Wilcox Trux
Cole	Davis	Murray	Jordan
Reo	Detroiter	Bour-Davis	Liberty
Paige	Paterson	Premier	
Peerless	McFarlan	Knox	
Dodge Brothers	Westcott		

No Greater Recommendation Can Be Given a Spark Plug

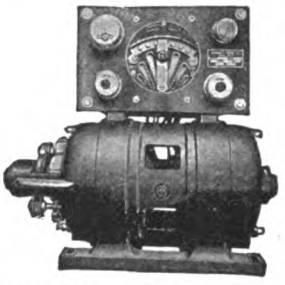
Champion Ignition Co. Flint, Mich.

Have You This Plug On Your Car?

Sold Everywhere

Accept No Plug Unless A C is Burnt Into the Porcelain

BIG PROFITS IN BATTERY CHARGING with the H B charging set.



The H. B. set charges from one to six auto starting and lighting batteries at one time. Current costs about 15c per battery and you get from 75c to $1.50 for each battery charged. FIGURE YOUR PROFITS.

Every auto battery needs a full charge outside the car at least once in two months, for a well charged battery means **more power, brilliant lights and quicker starting.**

H. B. Users Are Averaging $20.00 to $60.00 Per Month Clear Profit

These figures are not guesswork, but are taken from the actual letters written by successful and satisfied H. B. owners and users.

The advertising derived from having a satisfactory battery charging outfit will bring new customers to your garage, and stamp you as being up-to-date. H. B. Charging Sets not only make you big profits, but the work done will more than satisfy your customers.

$10.00 Places This Money Maker in Your Garage

The balance in ten monthly payments of $14.00 each. Every H. B. Outfit is guaranteed.

Even after taking out your monthly payments, the H. B. Outfit will show you a most substantial profit, and will be paying for itself.

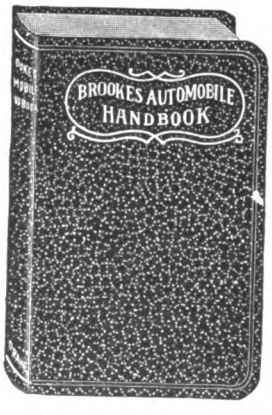
Write to us and we will gladly send full particulars about this profit-making H. B. Set.

Send your name NOW. **Delays pay no Dividends. Do It NOW!!**

Where city current is not available, we can furnish a belted outfit, to operate from your engine or line shaft.

HOBART BROTHERS CO., Box 41, TROY, OHIO

The Most Practical Book on the Automobile Ever Published



Brookes' Automobile Handbook

(NEW EDITION)

For the owner, repairman, garages, automobile designers and dealers. A complete encyclopedia including every subject in relation to the automobile.

An idea of the extent of some of the main divisions may be formed from an inspection of Starting and Lighting (91 pages), Carburetor Instructions (52 pages), Transmission Systems (38 pages), Ignition (126 pages), and Engines (46 pages).

715 pages. 335 Illustrations and 12 Tables. Printed on Plate Paper.

Handsomely bound in leather, stamped in gold, red edges, round corners, pocket size.

Price, postpaid, $2.00.

Frederick J. Drake & Co.

1005 Michigan Ave., Chicago, Ill.

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EITHER YOU FIND IT (Autocrat Motor Oil)

THE BEST OIL YOU EVER USED

OR YOU DON'T PAY FOR IT!

The Perfect Motor Oil

Autocrat IS NOT ONLY THE MOST EFFICIENT but the most economical motor lubricant made.

IT CANNOT BE DUPLICATED OR EQUALLED. We are the only manufacturers in the world making this grade of oil.

MADE FROM PREMIUM PENNSYLVANIA CRUDE—selected from a small exclusive district—it is guaranteed to contain no sulphuric acid, no caustic soda, no chemical treatment of any kind.

HIGHEST FIRE TEST—LOWEST CARBON CONTENT (less than 16/100 of 1%).

FOUR GRADES: Light and Medium for pleasure cars; Heavy for trucks and air-cooled engines; Extra Heavy for motorcycles, etc.

An Ideal Transmission Lubricant

EBONITE FOR TRANSMISSIONS can be guaranteed by you dealers as far as you want to go; you can't go too far for us.

IT NEVER SEPARATES. Even when liquefied by heat (which never occurs in actual use) it will return when cool to its former consistency.

IT FORMS A FILM OVER THE GEAR TEETH that lasts all season, protecting transmissions, differentials and universals from noise and wear.

ONE FILLING LASTS A WHOLE SEASON.

PUT UP IN 5-lb., 10-lb., 25-lb., 50-lb. cans; ½-bbl. and 1-bbl. lots.

BAYERSON OIL WORKS, Manufacturers of High Grade Oils and Greases ERIE, PA.

—and the same proposition holds good for EBONITE!

Gemco MILWAUKEE End Thrust BUMPERS



AN EASY WAY TO DOUBLE SALES

Sell two bumpers every time instead of one. Car owners are quick to realize that they need a bumper on the rear end just as much as on the front.

And every car owner knows that it's cheaper to invest a few dollars in bumpers than to buy a pair of new lamps and a new fender every once in a while, to say nothing of having the car tied up for several days.

Ask your jobber about Gemco Bumpers, or write direct to

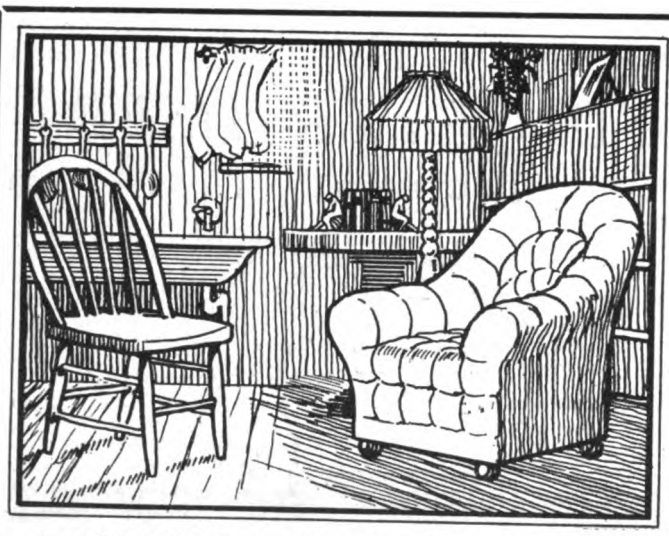
Gemco Bumpers pay a good profit on every sale. They are made on the correct End Thrust Principle, with channel or diamond bars, to fit all cars.

GEMCO MANUFACTURING CO.

756 So. Pierce St. :.: :.: Milwaukee, Wis.

Popular Automobile Accessories

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CAN YOU PICK COMFORT WHEN YOU SEE IT?

It's easy to recognize comfort—and the absence of it—in the familiar figures of the kitchen chair and the over-stuffed, though both of them are chairs.

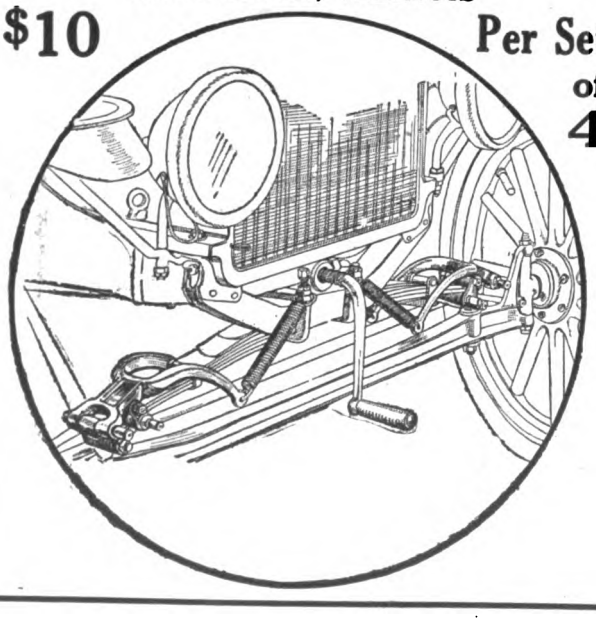
W & C
The Original Double Arm Shock Absorber for Fords

—"over-stuffs" your Ford. Pads out all the roughness and makes it ride like the deep upholstery on your favorite easy chair. **Say "W & C" to your dealer,** and get that comfort in your Ford. Better than the best riding sensation you can expect from your car until you **try W. & C.** Do it today.

Specially Interesting Dealers' offer. WRITE FOR DETAILS.

PHILIP H. WEBBER & CO.
HOOPESTON, ILLINOIS

$10 Per Set of 4



SOLDER
(ready to use)



Kester Crystal-Core Solder

is a seamless tube of wire solder. The core is a soldering flux that flows as solder is used CRYSTAL-CORE is especially adapted for AUTOMOBILE work. Tube is a series of cells. Each cell is filled with the proper amount of flux. Kester Crystal-Core Wire Solder is cheaper to use than solid wire or bar solder. No time is lost in preparing or applying the flux or acid.

Cleaner, Neater, Quicker Results

Use it for battery terminals, gasoline pipe and tank joints, electric light connections, radiator leaks, cracked fenders, speedometer flexible shaft, spark plug terminals and general garage use. Sold in coils of 1 pound, and on spools of 1, 5 or 10 pounds.



Order Today From Your Jobber

Manufactured by
CHICAGO SOLDER CO.
218 N. Union Ave., Chicago



EVERLOC is the original, self-vulcanizing tire patch, guaranteed without heat or tools to permanently repair any puncture or blowout up to 17 inches in length. You can apply it in three minutes and, immediately after application, inflate the tire and drive as hard and fast as you want. Air pressure and road pressure vulcanize the Pure Para Rubber of Everloc into the tube itself.

The genuine U. S. Khaki base of Everloc with the cured rubber airproofing and the Pure Para Rubber sticking surface are exclusive Everloc features. Everloc is the only patch guaranteed not to dry out in less than 10 years. Order from your dealer today, or if he is sold out, send us his name for sample strip.

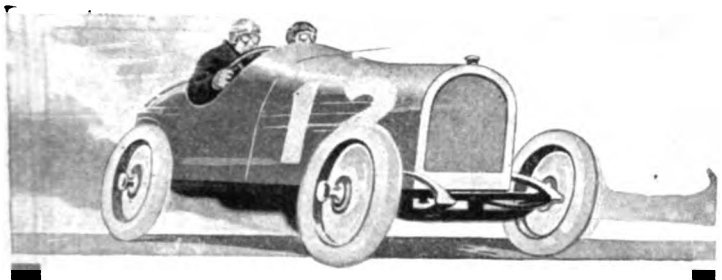
In Sheets: 6½x18½ inches $1.50; 4x18 inches $1.00; 2x16½ inches 50c

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We make a special sheet 20x28 inches for garage use

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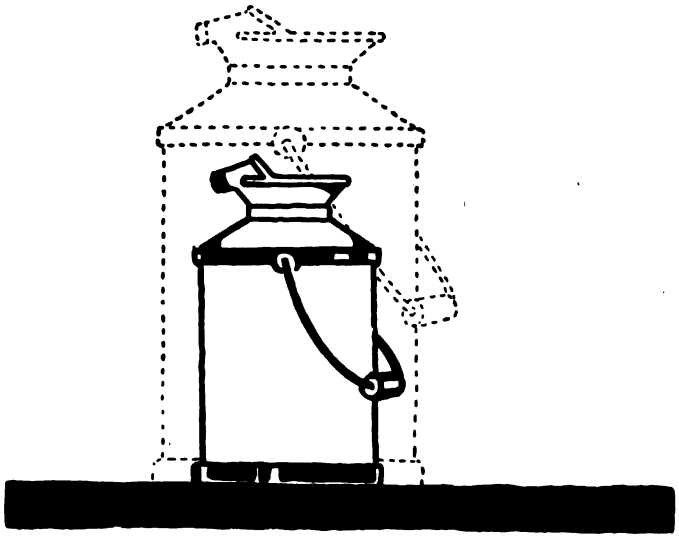
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Cut-away view of Wilmo Manifold showing scientific principle and simple construction.

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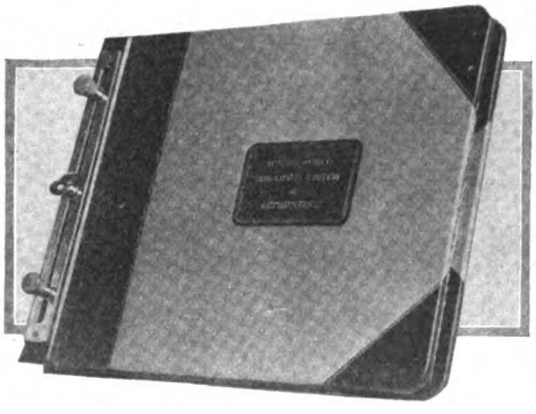
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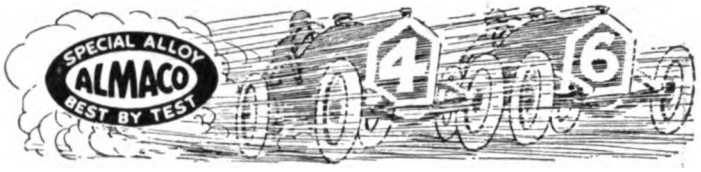
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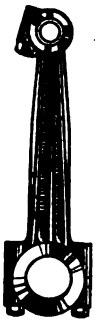
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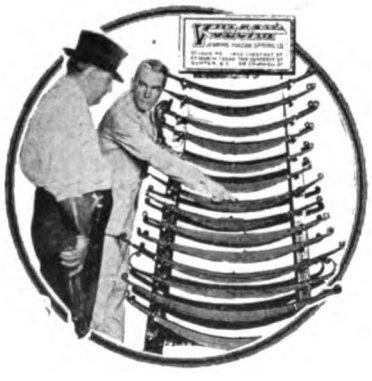
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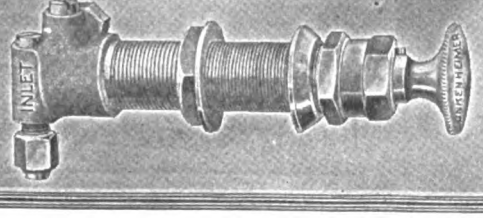
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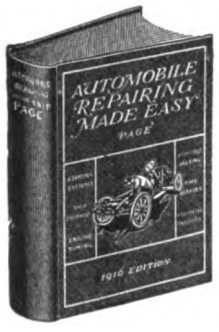
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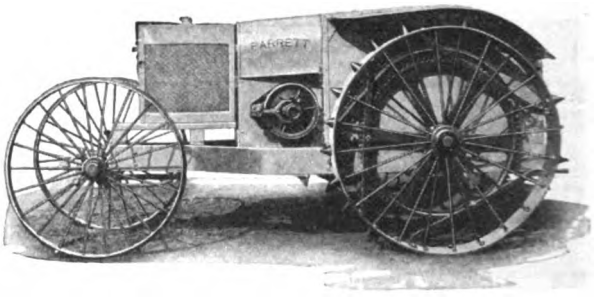
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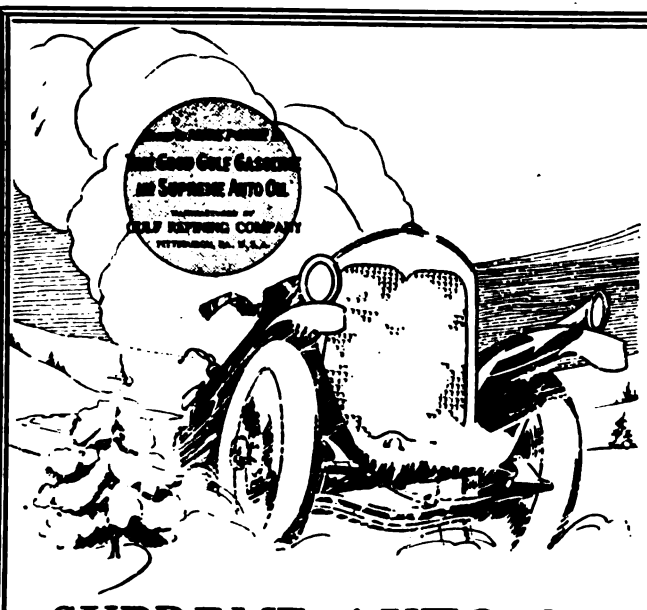
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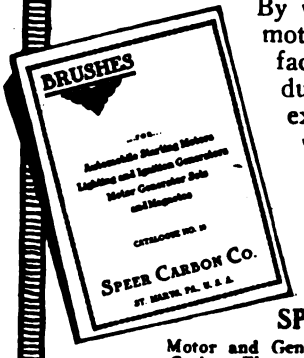
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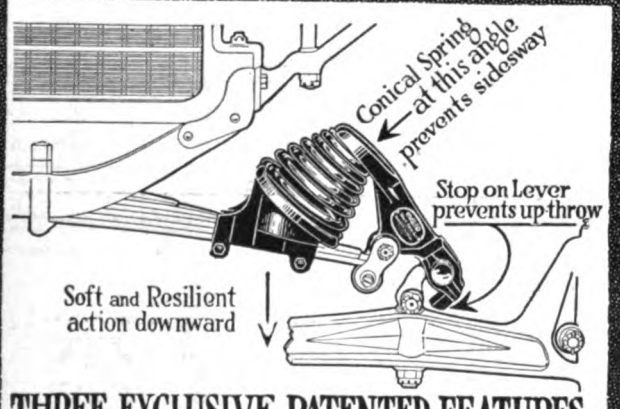
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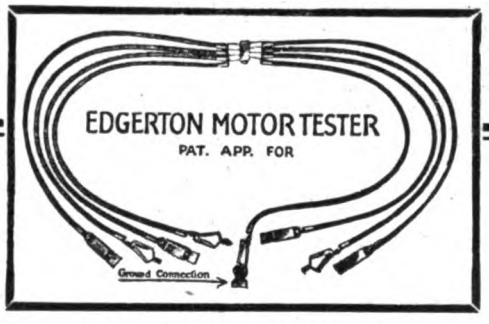
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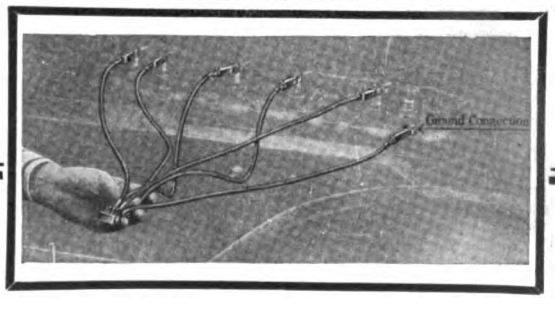
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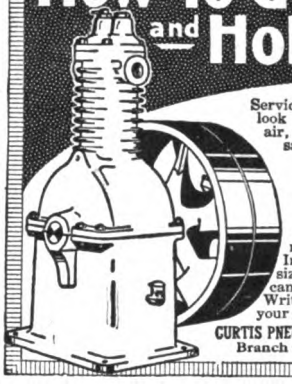
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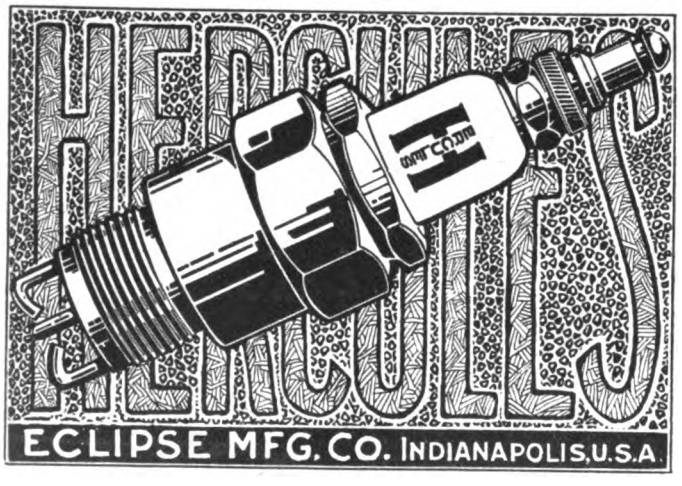


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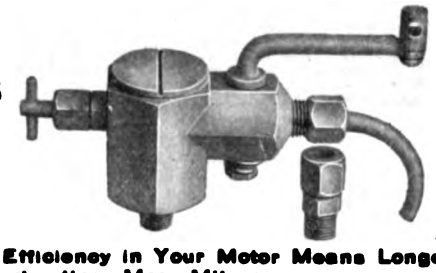
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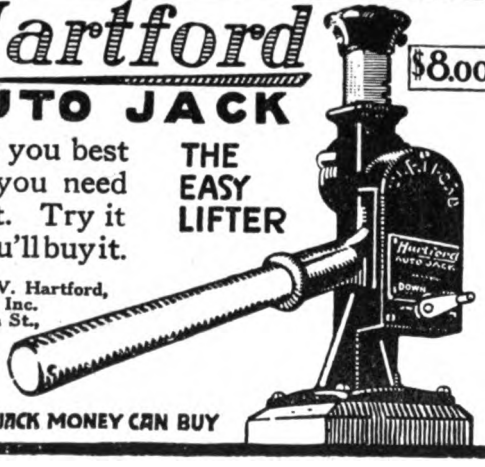
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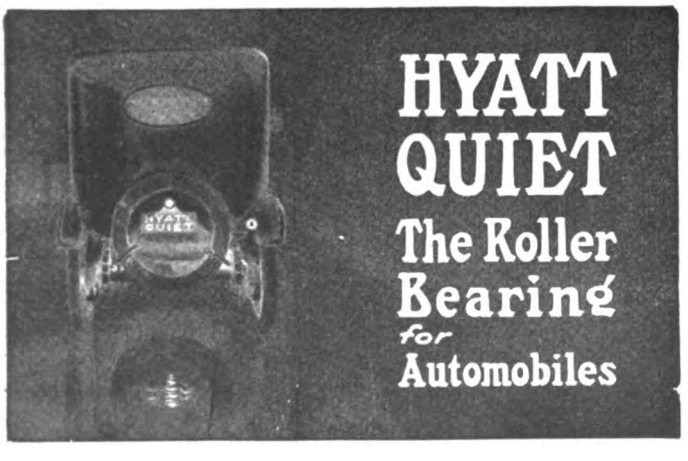
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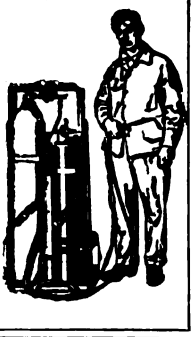
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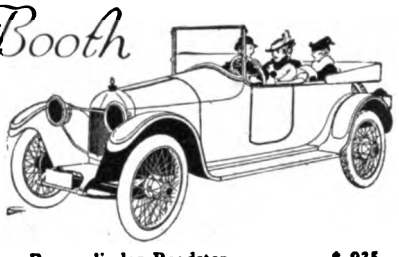
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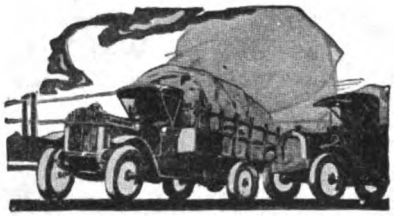


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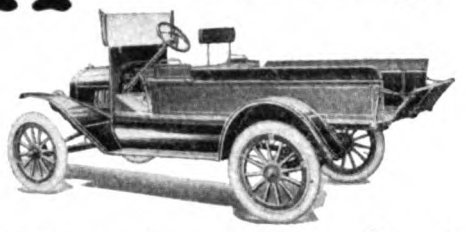
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32x4	20.10	13.25	3.05
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36x4	22.55	15.20	3.50
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Pope Toledo	American Underslung
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Oakland—Seldan	Marmon—Carter Car
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30x3½	8.50	2.25	36x4	14.50	3 50
31x3½	9.00	2.50	34x4½	16 75	4.00
32x3½	9.50	2.50	35x4½	17.50	4.15
34x3½	10.00	2.55	36x4½	18.00	4.25
36x3½	11.25	2.75	37x4½	18.50	4 36
31x4	12.25	2.90	35x5	18.00	5.00
32x4	13.00	3.20	36x5	19.00	5 00
33x4	13.25	3.25	37x5	20 50	5.20

For Non-Skid add 10% to All Prices.
Special Bargains in Slightly Used Tires.

	Used Tires	Used Tubes		Used Tires	Used Tubes
30x3	$4.00	$1.85	35x4	$8.00	$1 75
30x3½	4.75	1.45	36x4	8.00	1.75
31x3½	5 00	1.50	34x4½	8.50	1 75
32x3½	5.75	1.50	35x4½	8.75	1.80
34x3½	6.00	1.60	36x4½	10.00	1 85
31x4	6.75	1.65	37x4½	9 00	1.90
32x4	7.50	1.60	35x5	10.00	2 00
33x4	7.75	1.70	36x5	10.25	2.00
34x4	8.25	1.70	37x5		2.20

All goods shipped C. O. D. subject to examination, on receipt of 10 per cent of order.
TIRE REPAIR & SUPPLY CO.
1429 Michigan Ave., Chicago, Ill.

NO ADVANCE IN OUR
TIRE PRICE
This month only
Here is an opportunity to buy tires at the old prices.
This stock was purchased just before the present advance.
Buy now and save money.
Over 2000 new, standard make tires and tubes from which to make your selection.
All fresh stock.

Size	Casings	Tubes	Size	Casings	Tubes
28x3	$6.10	$1.50	35x4	$13.00	$2.70
30x3	6.30	1.55	36x4	13.50	2.75
30x3½	8.00	1.80	33x4½	16.25	3.25
31x3½	7.70	1.85	34x4½	16.55	3.30
32x3½	9.00	1.90	35x4½	17.15	3.35
34x3½	10.00	1.95	36x4½	17.50	3.40
31x4	11.50	2.45	37x4½	18.00	3.50
32x4	11.50	2.55	35x5	17.80	4.00
33x4	12.10	2.60	36x5	18.00	4.10
34x4	12.75	2.65	37x5	18.70	4.20

10% Extra for Non-Skid
All other sizes in proportion.
A 10% deposit required on all mail orders. Goods shipped subject to examination.
SERLIN TIRE CO.
(Chicago's oldest cut-rate tire house)
1300-1302 Michigan Ave., Chicago, Ill.
Phone Cal. 3408.

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ALUMINOID, $2 POUND
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Sunderland Machinery Co., Omaha, Neb

Atlas Welding & Cutting Plants, $90.00 to $350.00. Guaranteed best on the market or money refunded. We weld and machine ready to replace broken crankshafts, crankcases, stripped or broken gears, cylinders, etc. All welds guaranteed equal of new parts. Atlas Welding Works 46 Elizabeth Ave., Rahway, N. J.

WELDING PLANTS
FOR ALL PURPOSES
Small Cash Payment *Balance to Suit*
BERMO SALES CO., OMAHA, NEB.

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Manufacturers Looking For Live Representation in New York City
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Cars and Repair Parts
FRANK F. MATHESON, Wilkes-Barre, Pa.

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Trucking and Storage. Automobiles and Bodies Stored. Automobiles boxed for Export.
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made with Schebler equipment. Why not get a Schebler model E for your car? Our exchange proposition makes it easy.
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FREE BOOKLET

"How to Succeed in the Automobile Business," an application—$40,000 equipment—eight instructors—actual work, repairing and driving—Day and evening classes. **Greer College of Motoring**
1456 Wabash Ave., Chicago.

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MANUFACTURERS!

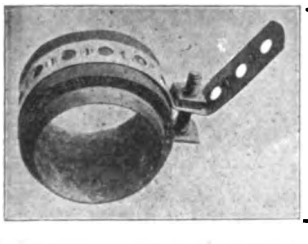
The odd parts and material of all kinds left over from this and maybe previous years manufacturing can be quickly turned into cash—through the

Clearing House Advertising Columns of MOTOR WORLD

No lot too small nor too big to clear up.

Send us a list of your odds and ends and without in any way obligating you we will submit a specimen Clearing House advertisement along with advertising rates.

FOR A
Quick Turn Over
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The Class Journal Co.
CLEARING HOUSE DEPT.
239 West 39th St. New York City



Mr. GARAGE MAN, you have always wanted a hose clamp that was adjustable to any size hose. This you will find in the "UNIVERSAL HOSE CLAMP" A most perfect clamp for all purposes. Retail price 10c each.
We have packages containing 36 clamps which we can send to you as a sample order upon receipt of $1.90.
Satisfaction guaranteed.
Universal Clamp Mfg. Co.
150 Broadway Concord, N. H.

FORD DEALERS

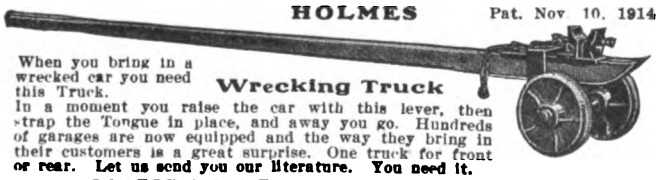
WRITE FOR SPECIAL PRICES ON CROWN FENDERS FOR FORD CARS
Chicago Automobile Supply House
1349-51-53 So. Michigan Blvd. CHICAGO, ILL.

Stop the Spring Breakage
It's poor policy to risk repeating the annoyance of a broken or weak spring—and the delay—by saving only a very little in buying or selling a *cheaper* spring instead of a "NEW ERA *BETTER* SPRING." Don't replace a broken spring with one no better. Wise dealers sell only the best. New Era "BETTER" Springs are the oldest and largest used line for replacement—at same price as from car factories. Made for all cars. GUARANTEED one year against breakage or sagging. graphited etween leaves for two years' lubrication. Write for complete lists, discounts—or state requirements and class of business



New Era Spring & Specialty Co.
870 Woodward Ave., Detroit, Michigan

HOLMES Pat. Nov. 10, 1914



When you bring in a wrecked car you need this Truck.
In a moment you raise the car with this lever, then strap the Tongue in place, and away you go. Hundreds of garages are now equipped and the way they bring in their customers is a great surprise. One truck for front or rear. Let us send you our literature. You need it.

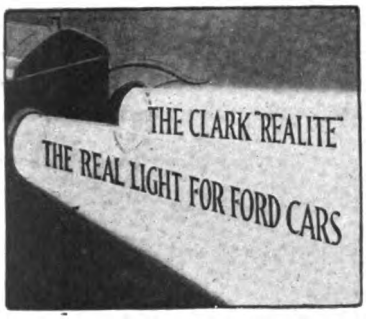
Wrecking Truck

ROBERT HOLMES & BROS., Danville, Illinois

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Always The Right Driving Light

Is a Big Profit Getting Necessity for Ford Cars

Every dealer and jobber who knows his trade, recognizes the tremendous demand for an automatic light-regulating device for Fords—built as well as the Ford car itself.

The Clark REALITE equals the Ford in efficiency. It is not a cheap attachment any more than the Ford is a cheap car. But it is inexpensive, as the Ford is inexpensive—a big saving in the long run, because it does the work.

REALITE DISCOUNTS MAKE IT PAY BETTER FOR JOBBERS AND DEALERS

It is a specially designed impedance coil that at low speed passes practically all the current from the magneto to the lamps, increasing the light from 200 to 400%. A good driving light is maintained at 6 to 8 miles per hour, and at 20 miles it is equal to the strong storage battery light on big cars. Keeps the light at all speeds practically uniform.

Easy to install. Highly efficient bulbs furnished to replace regular Ford bulbs. Lamps are connected in multiple.
Already selling fast wherever introduced. *Best discounts. Absolutely guaranteed.*

Write or wire for complete details.

PRICE $5

Hilton & Burks Selling Agents
TEXOLA OKLAHOMA

Worth More—Pays More Than Others

Eureka Rim Compressor

The Simplest and Most Effective Way to Remove Tires from Demountable Rims of the Transverse Split Type.

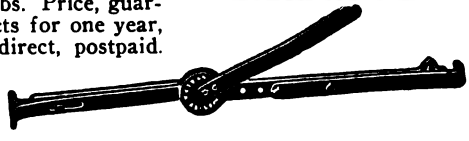
It does the work in twelve seconds. Replaces in like time.





The Eureka Rim Compressor consists of a lever which moves two arms with specially devised ends by means of an eccentric bearing. The device is attached directly and does its work quickly and easily, both removing and replacing tires. With the Eureka Rim Compressor you cannot pinch your inner tubes or damage your rims in any way. Made of extra strong steel, well riveted.

Shipping weight, 5 lbs. Price, guaranteed against defects for one year, $3.00. Dealers or direct, postpaid.



EUREKA RIM COMPRESSOR, Inc.
ADDISON, N. Y.

Advertisers' Index

A
American Ball Bearing Co. 100
American Bronze Co. 80
Ames Co., F. A. 126
Atwater Kent Mfg. Works 121
Auburn Ignition Mfg. Co. 110
Automobile, The 123
Aluminum Mfg. Co. 117
Armleder Co. 94

B
Babcock Co., H. H. 2
Backus Novelty Co. 120
Bayerson Oil Works 113
Benford Manufacturing Co. 126
Berele National Spark Plug Co 125
Black & Decker Mfg. Co. 110
Bosch Magneto Co. 97
Brown-Lipe-Chapin Co. 126
Brunswick Motor Car Co. 118
Bunting Brass & Bronze Co. 121

C
Cassidy, E. A. 106-107
Champion Ignition Co. 112
Chase & Co., L. C. 82-83
Chicago Auto Supply House 133
Chicago Solder Co. 114
Connecticut Tel. & Electric Co. 99
Collison, Geo. A. 135
Commerce Motor Car Co. 86-87
Curtis Pneumatic Mchy. Co. 120

D
Delion Tire & Rubber Co. 126
Detroit Battery Co. 124
Detroit Accessories Corp. 125
Disco Electric Starter Corp. 126
Drake & Co., F. J. 112

E
Eclipse Mfg. Co. 120
Edgerton Co., R. C. 119
Eisemann Magneto Co. 115
Elgin Motor Car Corp. 4
Eureka Rim Co. 134

F
Faw, J. H. 120
Fedders Mfg. Co. 102
Ferro Machine & Fdry. Co. 93
Firestone Tire & Rubber Co. 92
Fitzgerald Mfg. Co. 121
Foremost Farm Papers 124
Four Wheel Drive Auto Co. 96
Fried & Stonier Co. 122
Fulton Co. 124

G
Gemco Mfg. Co. 113
Gibson-Hollister Mfg. Co. 121
Goodrich, Co., D. F. 108
Goodrich-Lenhart Mfg. Co. 135
Grossman Mfg. Co., Emil 123
Gulf Refining Co. 119

H
Hartford, E. V. 121
Hassler, Inc., Robt. H. 119
Hawthorne Mfg. Co. 123
Henney Buggy Branch 125
Hide, Leather & Belting Co. 103
Hill Pump Valve Co. 123
Hilton & Burks 134
Hobart Bros. Co. 112
Holmes & Bros., Robert 133
Hotel St. James 118
Houk Mfg. Co. 120
Hudson Motor Car Co. ..... Front Cover
Hurlburt Motor Truck Co. 122
Hyatt Roller Bearing Co. 122

I
Imp Carbon Chaser Corp. 122
Inter-State Motor Co. 126
Inland Machine Works 85

Digitized by Google

Advertisers' Index

J

Jenkins Vulcan Spring Co. 117
Johnson & Son, S. C. ..... Back Cover

K

K-P Manufacturing Co. 125
Kelly Ball Bearing Co. 124
Kissel Motor Car Co. 125
Krembs & Co. 120

L

Liberty Motor Car Co. 123
Lunkenheimer Co. 117

M

Manley Motor Corp. 124
Maxfer Truck & Tractor Co. 117
Marvel Accessories Mfg. Co. 100
Marathon Tire & Rubber Co. 90
Michelin Tire Co. 79
Monroe Motor Co. 84
Mosler & Co., A. R. 124
Motor Age 122

N

National Rubber Co. 95
New Departure Mfg. Co. 120
New Era Spring & Specialty Co. 133
New Process Gear Corp. 126
Norma Co. of America 3

P

Parrett Tractor Co. 118
Peerless Motor Car Co. 88
Periman Rim Corp. 121
Pittsfield Spark Coil Co. 125
Pouvailsmith Corp. 111
Presto-O-Lite Co. 123

Q

Quaker City Rubber Co. 118

R

Rajah Auto Supply Co. 124
Redee Manufacturing Corp. 121

S

Scripps-Booth Corp. 123
Selden Truck Sales Co. 98
Shaler Co., C. A. 104
Sheldon Axle & Spring Co. 122
S. K. F. Ball Bearing Co. 123
Sparks-Withington Co. 120
Speer Carbon Co. 119
Splitdorf Electrical Co. 91
Standard Steel Car Co. 89
Standard Woven Fabric Co. ..... 3rd Cover
Stephens Motor Branch 81
Stevens & Co. 126
Stewart-Warner Speedometer Corp. ..... 2nd Cover
Studebaker Corp. 1
Sunderman Corporation 109
Swedish Crucible Steel Co. 105
Swinehart Tire & Rubber Co. 127

U

Universal Car Equipment Co. 125
Universal Clamp Mfg. Co. 133
United Engineering & Mfg. Co. 110

V

Van Cleef Bros. 122
Van Sicklen Co. 115
Vincent Clear Room Steering Wheel Co. 118

W

Webber Co., Phil H. 114
Whittier Co. 115
Williams Foundry & Mach. Co. 121
Woodworth Mfg. Co. 136
Wood & Co., W. C. 114

Z

Zenith Carburetor Co. 122



Removing Road Wheel. Large Jaws attached to Brake Drum. Note the Range 15 ins. diam.

1300 Now in Use

in New York and New England. Invented by expert mechanic and experienced garageman, it is the best tool on the market. Strong and well made, never out of order.

Quicker and Better

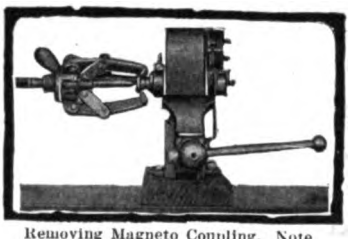
than any other tool for any number of jobs necessary in every garage. Built on principle of Universal Chuck.



COLLISON'S Universal Puller

(Patented)

Three 5½" jaws, three 7½" jaws, two 12" jaws. Capacity up to 17". Turning handle contracts and expands jaws. Makes rigid attachment. Can be used either with two or three jaws.



Removing Magneto Coupling. Note the Range 1-13/16 inch Diameter.

Garageman's Life Saver in time of hurry and pressure of work. Removes wheels, gears, joints, couplings, wrist pins, straightens frames, etc. Satisfaction or money back.

Price complete, $20. 25% discount to Dealers and Garagemen.

Geo. A. Collison
Burlington, Vermont

Stop the Ford Thief!



THE GOODRICH YALE LOCK and SWITCH for Ford cars offers the only positive protection against highway pirates and joy-riding crooks, because

—it is unlockable, unscrewable and unpickable.
—the Yale lock key cannot be duplicated—yours is the master key and there's no other like it.
—one turn of that key locks the ignition and covers up the screw heads all in one motion.
—the thief's tools are rendered useless—the lock cannot be removed.
—metal shutters sliding over the screws which hold the Goodrich Yale Lock and Switch in place are the *Nemesis of the Ford thief.*
—only the owner of the key can remove this lock—anyone can install it in two minutes.

$3.25 Price Complete

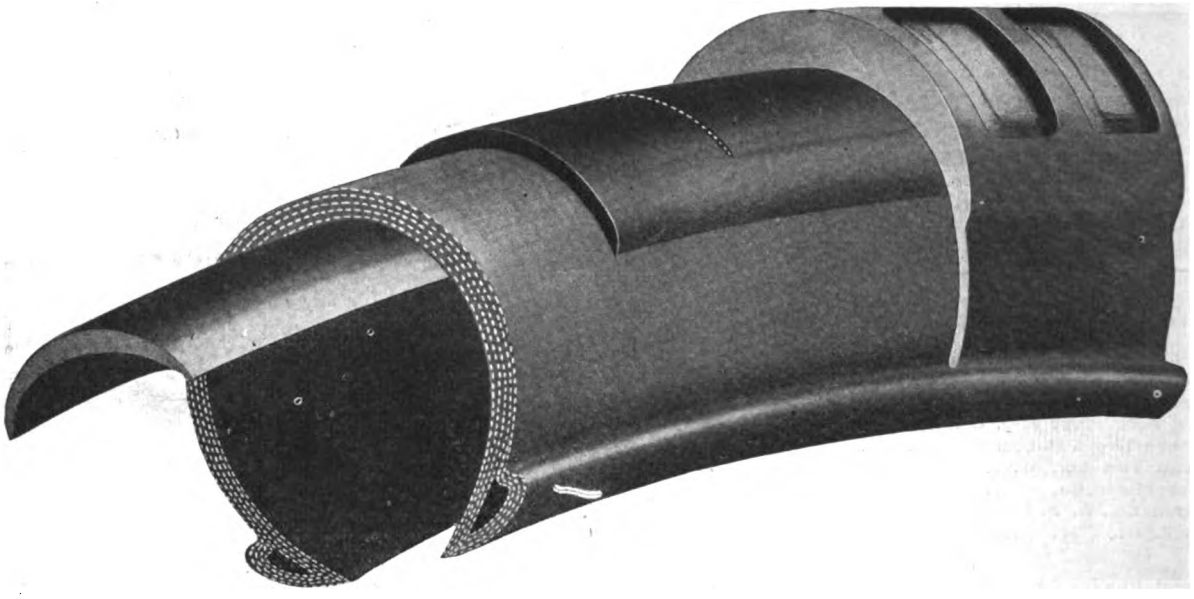
$4.50 in Canada

DEALERS: The many provable advantages of the Goodrich Yale Lock and Switch make it the fastest and most profitable seller in the Ford accessory field. Write or wire today for terms.



Goodrich-Lenhart Mfg. Co.
Widener Bldg., Philadelphia

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A Fast, Lively, Quality Tire That Is *Also* Puncture Proof

We guarantee the Woodworth Trouble-Proof Tire to run 5,000 miles without puncture or blow-out.

But that is only an *added* reason for buying it.

Entirely aside from its puncture proof qualities, it is one of the most reliable and durable tires ever put out.

WOODWORTH TROUBLE-PROOF // TIRES //

The addition of a specially prepared and perfect fitting strip of chrome leather to the inner side, *after* the tire is made, makes it puncture-proof.

The springy resilience, the light, swift, lively qualities of the Woodworth are noticeable. Its wearing qualities are unequalled.

Dealers sell Woodworth Tires in quantities regardless of what other tires they handle. There is no other tire that will exactly suit the man who is looking for Woodworth performance.

WOODWORTH TROUBLE-PROOF TUBES

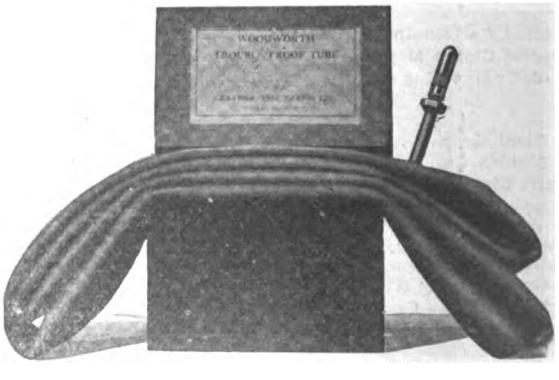
—are finest red rubber, antimony-cured, hand-made, at a fair price. They enable your casings to stand up and deliver their full strength.

We want dealers who are building for the future and who realize that selling a tire that delivers the goods is the tire that means real business for the dealer. Exclusive territory on this remarkable tire and real co-operation is awaiting the dealers we close with.

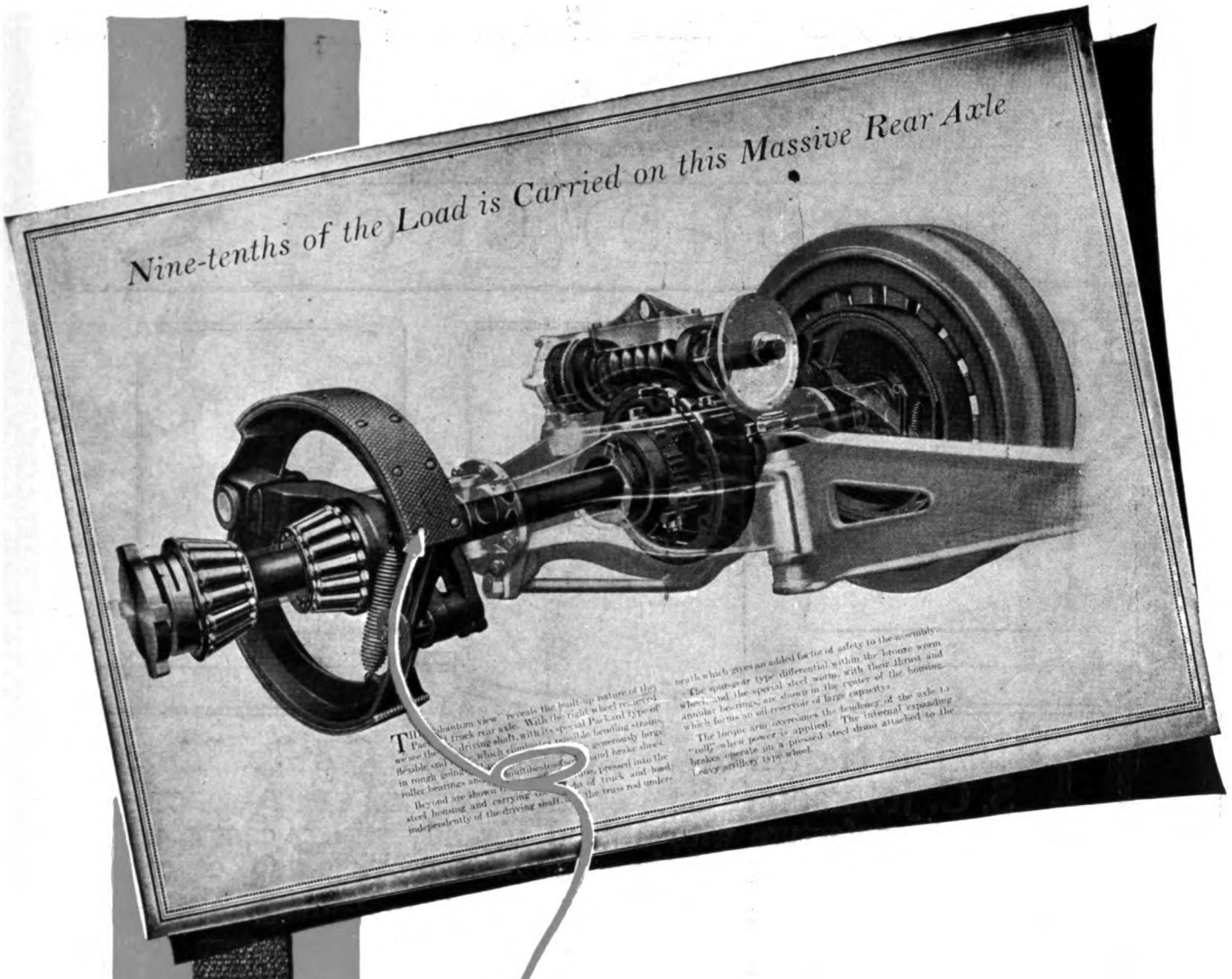
WOODWORTH MANUFACTURING CORPORATION

Niagara Falls, New York

Canadian Factory, Niagara Falls, Ont.



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The massive rear axle of the **PACKARD** truck may truthfully be said to carry nine-tenths of the load. With equal truth—the massive inherent strength of the small strip of Multibestos guards the safety of the entire load.

MULTIBESTOS

TRADE MARK REGISTERED

The tribute implied in the above illustration is full repayment for our years of constant effort in the determination to produce the best possible Brake Lining.

Such an endorsement is also a guarantee of quality to the growing army of Multibestos users.

Again we say: **JUDGE MULTIBESTOS BY THE COMPANY IT KEEPS.**

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Factory: Walpole, Mass.

N. Y. Branch & Export Office, 1779 Broadway

Boston, 175 Massachusetts Ave.
Philadelphia, 1309 Race St.
Chicago, 1432 Michigan Ave.
Atlanta, 6 West Harris St.

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Protects and preserves the finish. Impervious to dust, water, weather, etc.



Cures 80% of engine troubles. The safest, easiest and quickest method.



Removes spots, road-oil, scum, etc., from body, hood and fenders.

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For 1917 our advertising appropriation has been doubled. Advertisements will appear in every issue of all the motor papers and in addition to this we will use large space in all the leading magazines and weeklies. See our five-page colored insert in January issue of Motor.

Johnson's products are for sale by all jobbers.

For further particulars or samples of any Johnson Products, write us on your business letter-head.

S. C. JOHNSON & SON, Dept. M.W., RACINE, WIS.



Penetrates between the leaves of springs thoroughly lubricating them.



An automobile body varnish that amateurs can use successfully. Dries in 24 hours.



For renewing tops, side curtains, etc. Also touching up worn, rusty metal parts.

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Volume L
No. 6

New York, February 7, 1917

Ten cents a copy
Two dollars a year

USE A SLEDGE

When you have a job requiring one.

The business of selling tires to-day has passed the tack hammer stage.

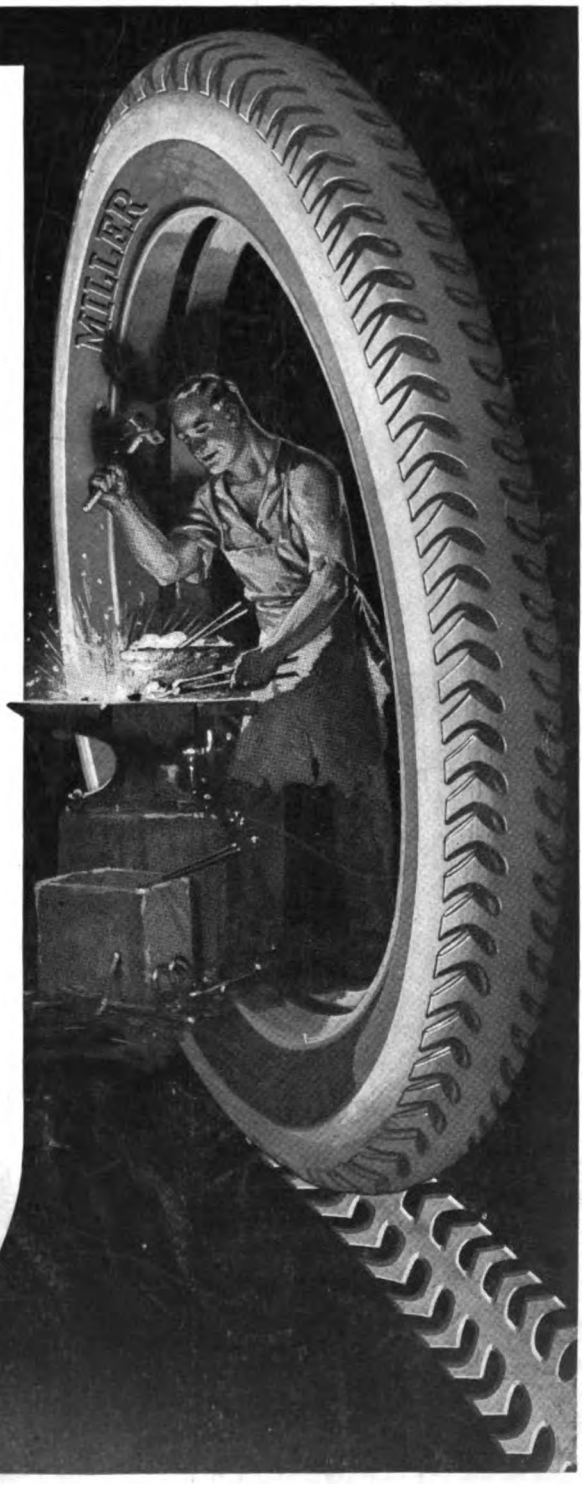
Miller dealers are provided with sledges. We give them a quality tire that is brimful of mile muscle—we advertise it with strong, aggressive *page* advertisements in a big list of national magazines. Then we give the dealer real sales and advertising helps that localize

Miller
GEARED-TO-THE-ROAD TIRES

But the Miller Selling Plan doesn't stop there. It is *new* and different and complete. It gives the dealer all the profit—from all the tires sold in his territory—not a mere slice of it.

But write for the Miller Selling Plan. A genuine surprise is in store for you—and write to-day.

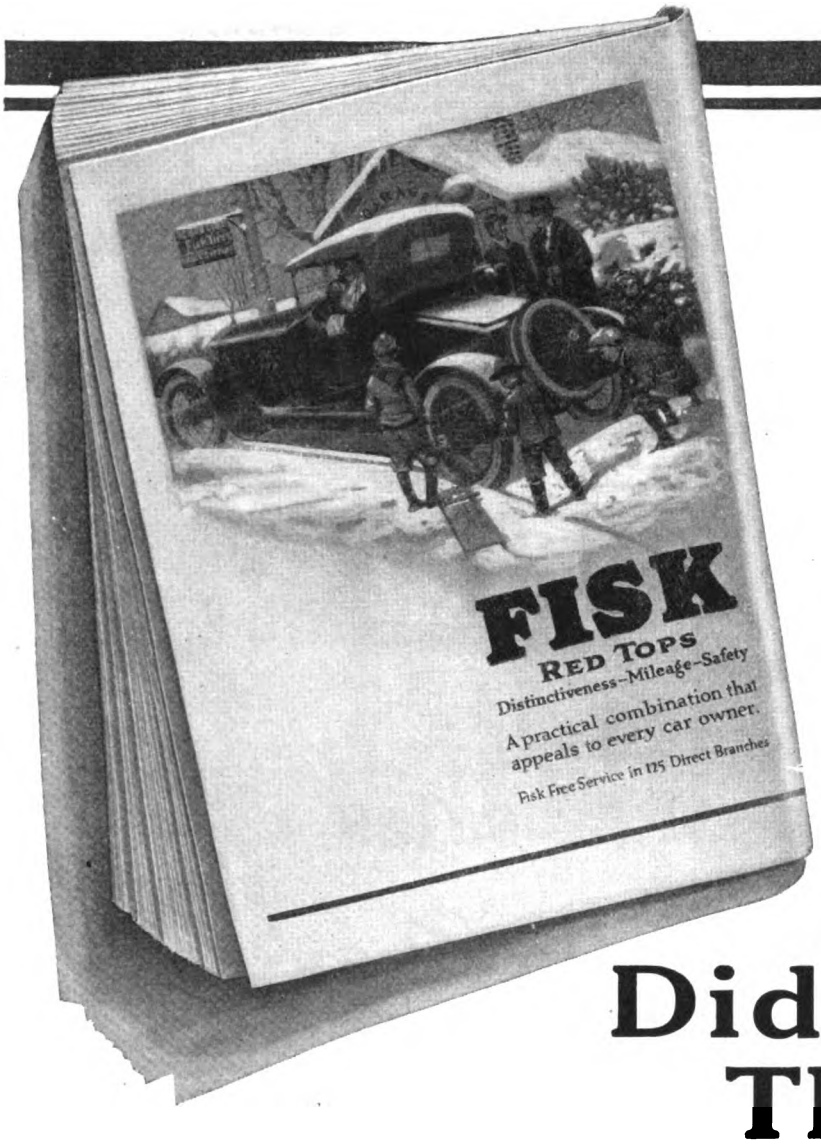
The Miller Rubber Co.
Akron, Ohio



Editorial Contents—Page 3

Advertisers' Index—Next to Last Page

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Did You See This Ad?



IT appeared during the past month in The Saturday Evening Post, Motor Life, American Motorist, and so on. It is the opening gun in the big campaign that is to continue throughout the year for the benefit of 65,000 dealers who sell

FISK TIRES

You who do not sell Fisk Tires still have ample time to reap your share of the profits to be made from this year's monster advertising plans.

Write at once to Dept. 23 for dealer plan.

THE FISK RUBBER CO.
of N. Y.
Chicopee Falls, Mass.

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MOTOR WORLD
DEALERS, JOBBERS AND GARAGEMEN

PUBLISHED EVERY WEDNESDAY

The Class Journal Co.
231-241 West 39th Street, New York City
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Detroit—95 Fort Street, West, Phone Main 1351
Cleveland—516-517 Swetland Bldg., Phone Prospect 107

Subscription, Per Annum (Postage Paid).....$2.00
Foreign and Canadian Subscriptions.....4.00
Single Copies (Postage Paid).....10 Cents

Postage Stamps will be accepted in payment for subscriptions. Checks, Drafts and Money Orders should be made payable to MOTOR WORLD.
The payment of subscriptions will be shown by stamping the date of expiration—the month and year—on the wrapper that carries your paper each week. No other acknowledgment necessary.

Cable Address, "MOTORWORLD," New York
Entered as second-class matter at the New York Post Office, Nov., 1900
Member of the Audit Bureau of Circulations

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Editorial Contents

End of the Monkey Wrench Man..... 5
The industry has waked up and is demanding better business methods in place of mere dexterity with tools.

Dealer Dinners in Picture.....8-13
Here are some of the dealer organizations which gathered for a bite to eat during the Chicago show.

A Salesman Can Go to College.....48-49
The University of Illinois has established a short course which is free and which teaches salesmanship in four days.

National Show Managers Association.....14-15
This body representing two score of local shows takes final form.

The Local Show Circuit.....41-43
Columbus, Ohio.....41
York, Pa......41
Wilmington, Del......43

Better Mechanics.....38-40
Valve timing on the Chalmers, and how to make a set of lathe tools.

Dealers Who Have Made Good.....44
Scientific Garage Construction.....36-37
The Man Who Never Knew a Lady.....16-17
Ever hear of a smoke generator?
Winter Business.....18-19
Accounting and Business System.....20-21
Angles of the Law.....22
The Newest Accessories.....23-25
Repairshop Short-Cuts.....26-27
Editorial Observation.....28
The Retail News.....30-32
Motor World Guide.....52-53
Improved Church Feed.....46
News Department.....47-50-51

Advertisers' Index on Pages 124-125

Merely a Matter of Miles

But many times it means all the difference between a smile and a summons.

Play safe by equipping with the

CORBIN-BROWN SPEEDOMETER

Take this instrument along with you on this season's trip. It can be depended upon and has been depended upon by automobilists the country over.

It has done what is expected of it: Told the truth and kept in good condition. That's all you can ask of a speedometer.

Dealers have handled the Corbin-Brown with unqualified success. There is a special model for Ford Cars.

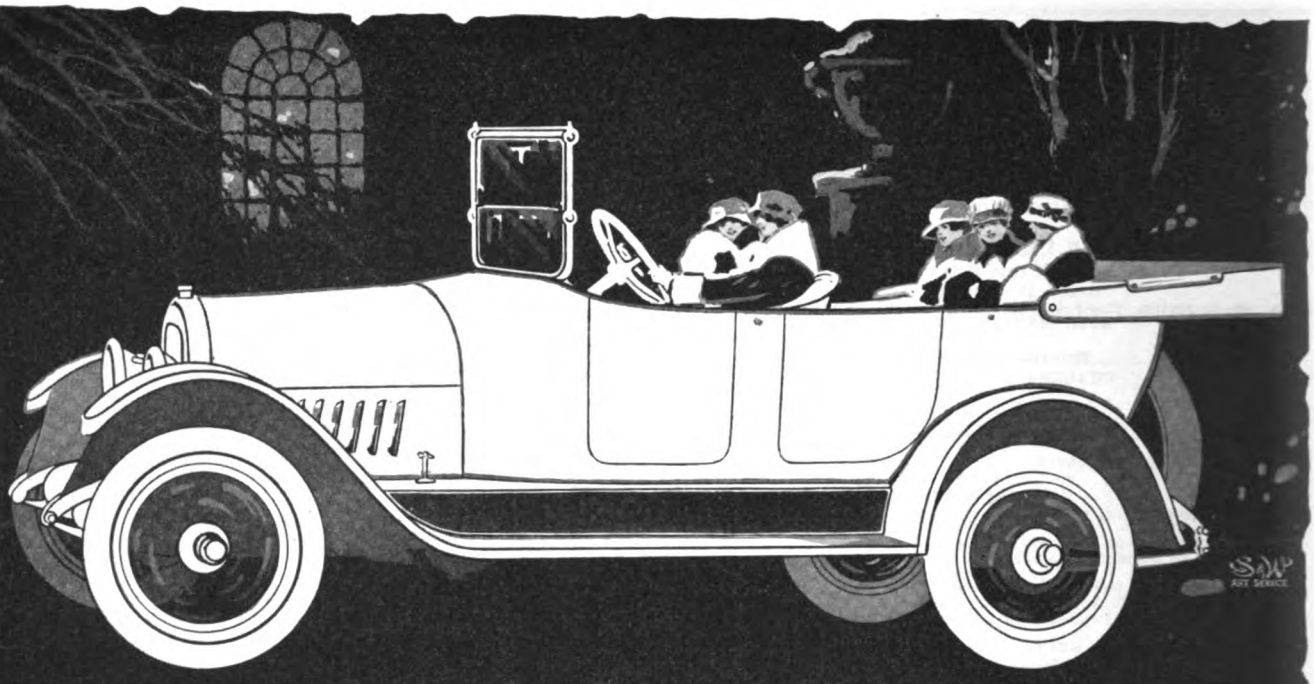
Get in touch with us today

CATALOG ON REQUEST



THE CORBIN SCREW CORPORATION
The American Hardware Corporation
Successor
NEW BRITAIN, CONN.
BRANCHES: New York Chicago Philadelphia

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STEPHENS SIX

"Best By Test"

Each Blast of the Traffic Whistle Finds THE STEPHENS SIX Zestful and Responsive

The sluggish automobile is damned and doomed.

The Voice of the City—an imperative din raised by the screech of motor horns, the clanging bells of trolley cars and the shrill blasts of traffic officers' whistles—has pronounced sentence upon it.

On streets choked with traffic, the automobile that stalls when the right of way calls is a common nuisance. After starting the motor and shifting gears to the accompaniment of the howls of the reproachful jam behind him, the owner of such a car soon loses all patience with it. His is a job for Job.

The Car With the Sprinter's Spring

The Stephens Six is built to meet the exacting requirements of city traffic. It is a car with punch—power under control.

The six-cylinder motor is of the conservative and economical high-speed type with unusual powers of acceleration.

On high speed, when the road is open, the Stephens Six will hit a fifty-mile-an-hour clip. When he is forced to crawl through traffic, the driver can throttle down to three miles an hour without shifting gears.

And when the crossing cop gives the "Come on" signal, the Stephens Six is ready to respond. The motor neither chokes from embarrassment nor knocks its unpreparedness. The car shoots ahead with the spring of a championship sprinter, who leaves his work without the loss of a fraction of a second when the starting gun is fired.

Stamina—Comfort—Beauty

These are other qualities to be found in the Stephens Six. Only a part of the car's unusual value is under the hood.

In motor, chassis and body, the Stephens Six is a car of stamina, built by a company of stamina, its sturdiness the heritage of fifty-one years of successful manufacturing experience. To appreciate Stephens Six comfort you must send it over the roughest roads and test its springs and balance. One look will convince you that the Stephens Six has all the graceful lines and artistic touches that the most discriminating connoisseur could ask.

Two Models, each $1150
Five-Passenger Touring Car
Three-Passenger Roadster

Our dealer proposition is most attractive. There is still some good territory open.

STEPHENS MOTOR
Branch of Moline Plow Co.
MOLINE, ILLINOIS
Factory: Freeport, Ill.

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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Vol. L New York, U. S. A., Wednesday, February 7, 1917 No. 6

The End of the Monkey-Wrench Man

THE MANUFACTURER HAS AWAKENED TO THE NEED OF BETTER BUSINESS

CHICAGO, Feb. 2.—The Chicago show has brought to light a situation of intense interest to the car dealer. It is this:

The manufacturer has awakened to the need for Better Business. He has come to the realization that he must have Better Dealers and is beginning to work hard himself to make his dealers better. And in his heart is the conviction that the dealer who declines to move forward with the industry must be dropped from the list and left by the wayside with the two-cylinder car, the ugly body and the other relics of a past age.

This has been a long time coming. Many times the future has been outlined by Motor World. Many times it has been said that there MUST BE Better Dealers and more intensive merchandising, and at the show dinners and sales meetings in Chicago this week factory presidents and sales managers are saying these same things in the very rooms where last year many of them devoted their time to vaudeville and hilarity. An entirely new note has been injected into these dealer gatherings, which this year are far more important than ever before.

The whole industry seems to have waked up at the top and to have concentrated its thought on Better Business.

In connection with this waking up of the Top of the Industry, several factories have begun to use their skilled and highly paid specialists in an effort to develop sales and business plans that will help the dealer. This is as it should be—which also Motor World has said many times before—for the sales and advertising men of the factories are the very ones who can best work out dealer aid plans.

The most constructive sample of this work is furnished by Mitchell. It is showing its dealers how to sell a Mitchell car in the best way, which is a lot more effective in the distribution of the Racine product than bales of telegrams shouting at the dealer to "take more cars."

This Mitchell story is an amplification of what was worked out a year ago and presented in address form by George O. Hipple, an old National Cash Register man and now Mitchell's merchandising counsel. The work is made up of talking-moving pictures. This is one of the truly modern methods of making the gatherings remembered, of getting some value out of them.

The pictures show how a salesman should move in showing a car in a salesroom to a prospect and as the pictures show the action Hipple makes the talk to the prospect. The dealer or salesman who will get this big Mitchell idea under his hat will have paid his fare to Chicago many, many times.

(*Continued on page* 8)

THE mighty sweep which Better Business and Intensive Merchandising are making is revealed through the dealer dinners in Chicago during the show. The biggest revelation is the manner in which manufacturers have gotten behind the idea and are out for Better Dealers. And they are **GOING TO GET THEM**—make them, find them or steal them. But they must **HAVE THEM.**

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Saxon Dealers Who Gathered During the Chicago Show



Photo, Kaufmann & Fabry Co.

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Photo, Kaufmann & Fabry Co.

Overland Held One of the Biggest Dinners During the Show

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Photo, Kaufmann & Fabry Co.

Some of the Studebaker Dealers Who Gathered During the Chicago Show

END OF THE MONKEY WRENCH MAN

(*Continued from page* 6.)

And then there is more talk of the same nature, all pointing out to the dealer that there MUST BE more real salesmanship and clean business. The dealer should not object to this advice, for it means dollars in his pocket.

And Frank Pelton, the advertising manager, tells the story of how Mitchell is to spend $1,000,000 in advertising in 8 months in order to drive the prospect to the dealer's door, after which the intensive sales work should turn many of these visits into profits.

Even though the first half of Studebaker's dinner was merriment and hilarity the big Better Business thought predominated. The dealers were urged to use cost and accounting systems and to go so far as to see which lines of cars paid best, so they might concentrate on the most profitable enterprise. They were urged to develop their territories more intensively and to be the leader in the field.

What Merchandising Will Do

It was pointed out how a certain dealer about to hook up with Studebaker chose Utica, N. Y., a city where 24 cars had been sold in four counties the year before. It was considered a poor field, but this dealer had the Big Idea. He appointed 31 booster dealers and 40 service stations. He gave six service cards with each car and for each inspection on the card paid a service station $3. He began less than 2 years ago and his business this year will top 500 cars.

Then there was a long talk on how the factory is prepared to furnish all kinds of data and sales plans to help the dealer put across the Studebaker commercial car proposition.

More salesmanship was demanded. It was told how one Southwestern dealer combed his territory with 3000 calls, sold 69 cars and landed hundreds of good prospects for future business. Chester Weaver, Coast distributer, urged the dealers to get behind good roads, for, he said, where the roads go the cars go.

Intelligent Business Conduct

At the Saxon luncheon the dealers were told by Harry Ford, president, of

"EVERY time I find one of our 575 Chicago territory dealers washing a car or monkeying around in the dirt I give him ——. I will guarantee to make $5,000 for any of our dealers at a cost of not more than $2,000 if he will only do as I tell him."—A. H. Pearsall, Studebaker wholesale manager, Chicago.

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the need for Better Business and more intensive salesmanship. The matter of intelligent business conduct was emphasized. Samples of complaining letters were shown in which the complaint was not specifically stated, the letter being nothing but a tirade of abuse.

Handling business intelligently was explained by word and by screen pictures. The dinner should be worth hundreds of dollars to Saxon dealers.

At the Reo dinner Robert Rueschaw said there are 6,000,000 farms in the United States and that only 2,000,000 farmers own cars. This, he pointed out, indicated what the Reo dealer COULD DO IF HE WOULD. He said the motor car business does not begin to approach any such thing as a "saturation point," and he compared it in use of the goods with the telephone, typewriter and watch. He said it would take the industry 10 years to make enough cars to supply all the farmers who can buy them if the dealers SELL INTENSIVELY AND MAKE THE MOST OF THEIR OPPORTUNITIES.

Now is the Time

"And," he asserted over and over again, "now is the time to get set. Now is the time to get a good salesroom, a good service station and a good manager. Keep your place clean."

This same idea was the theme at the Paige dinners. As Sales Manager Henry Krohn says: "The Most Beautiful Car in America isn't going to be sold in a blacksmith shop."

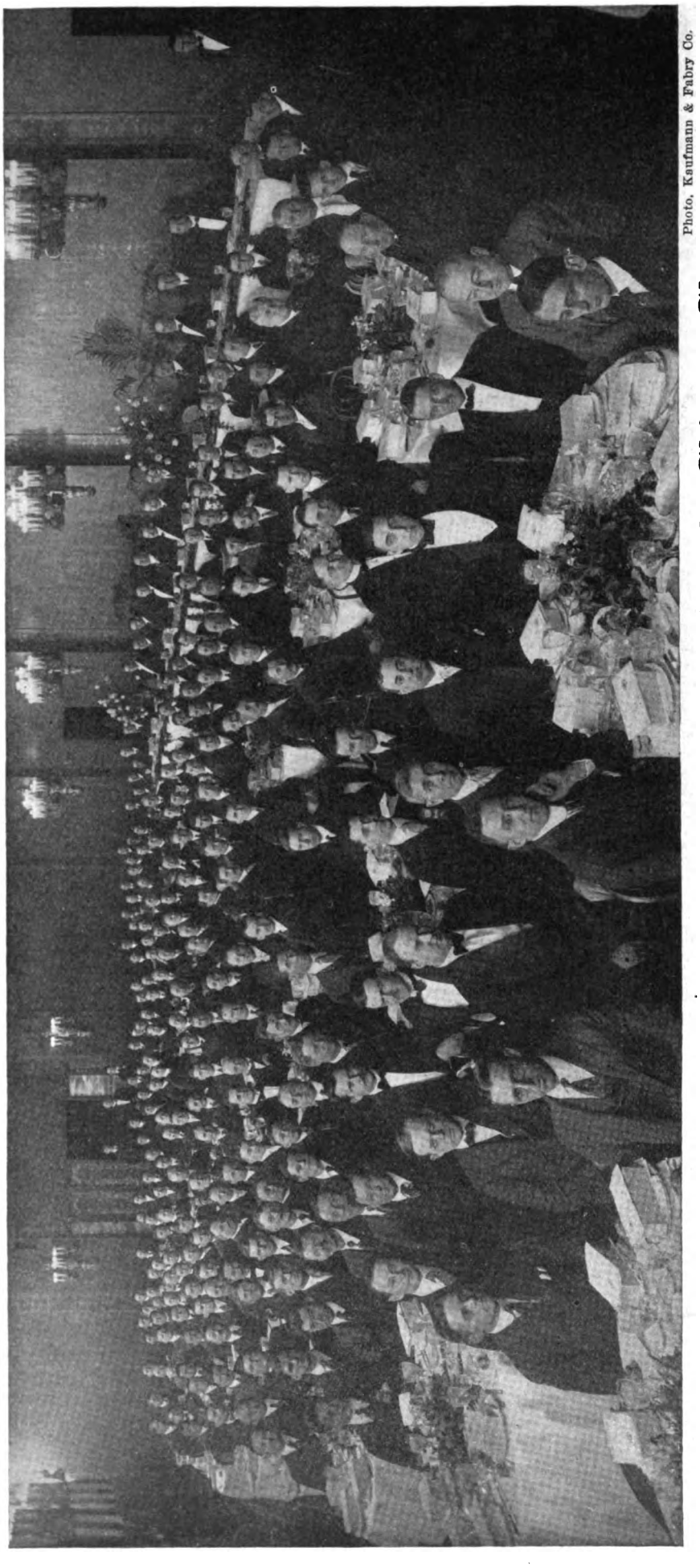
More management and less monkey-wrench work is needed. James Levy, Chicago, hit a high spot at the Chalmers luncheon when he said: "Every dealer can be as big as he'll let himself be. Too many of them are so close up against the wall that they can't see over it. If they would only back up a bit and look over they would be better off. As for me, there are two things I am going to do. The first is not to do a damned thing I can hire someone else to do. The second is to get as much fun out of life as possible, for the other day I figured up how long I'm going to be dead.

"Some of us resent many of the things the factory tries to do for us. We take them in the wrong light. We try to read between the lines. We wonder what they're trying to put over on us. Relax yourselves a bit, take this factory help and it will pay you real money."

How to Sell Sedans Now

Assistant Sales Manager W. J. Drumpelman pointed out how to sell sedans at THIS TIME OF YEAR. He told of one dealer who sent his road men out in sedans, calling on prospects who had said they didn't want cars until the weather was better. Three sedans

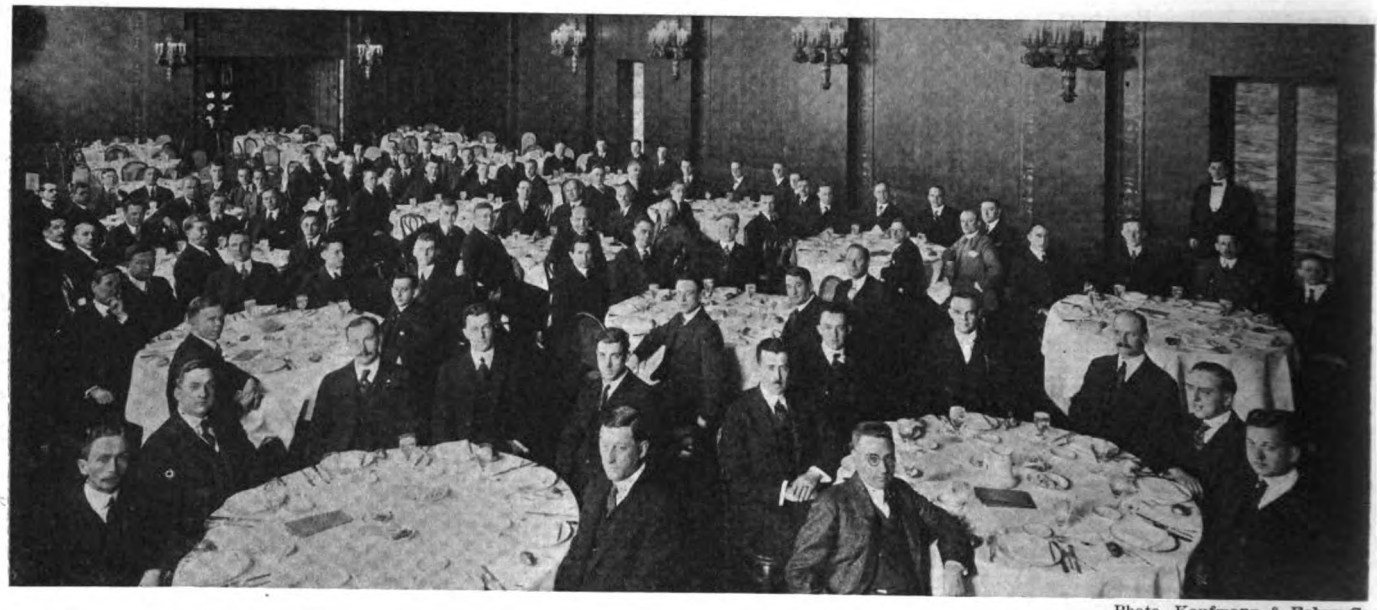
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Photo, Kaufmann & Fabry Co.

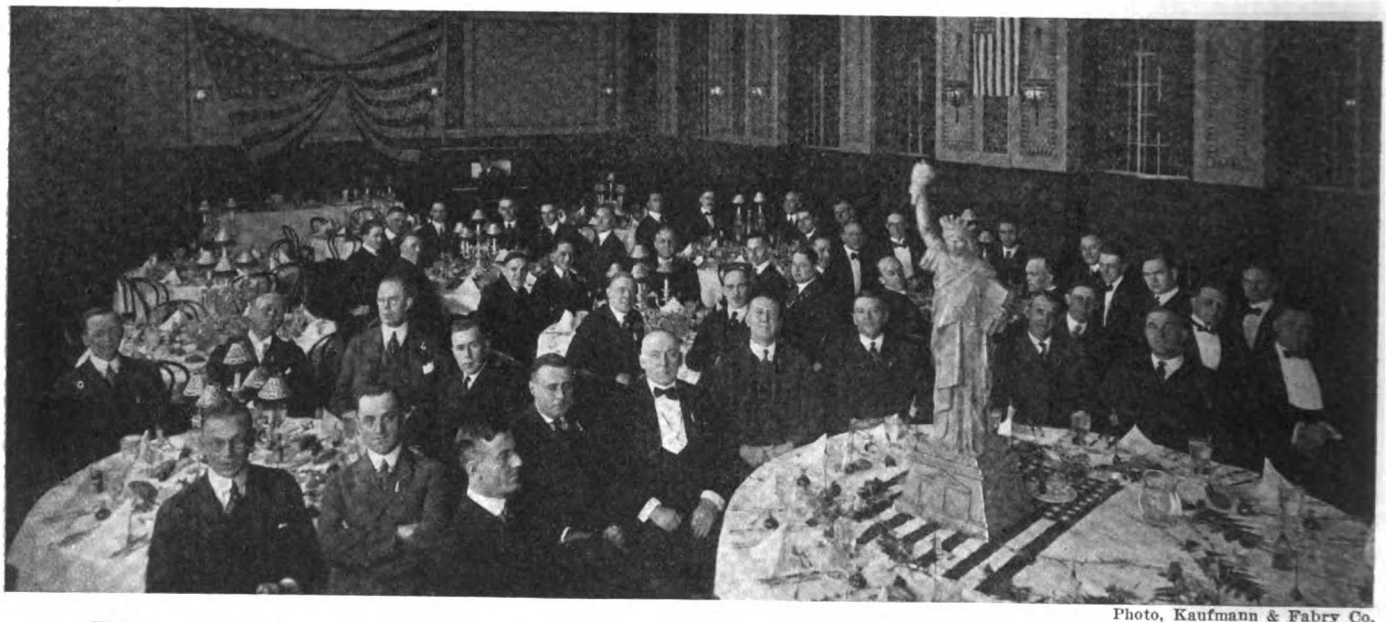
Banquet of Reo Dealers Who Gathered at the Chicago Show

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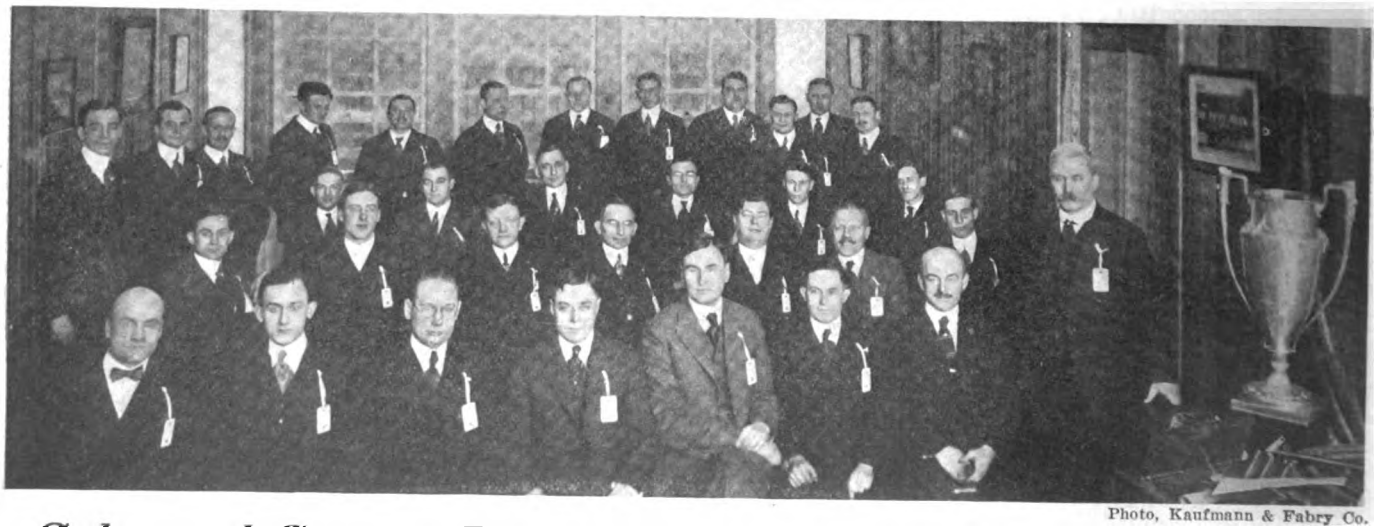
Photo, Kaufmann & Fabry Co.

Hupmobile Dealers Luncheon During the Chicago Show



Photo, Kaufmann & Fabry Co.

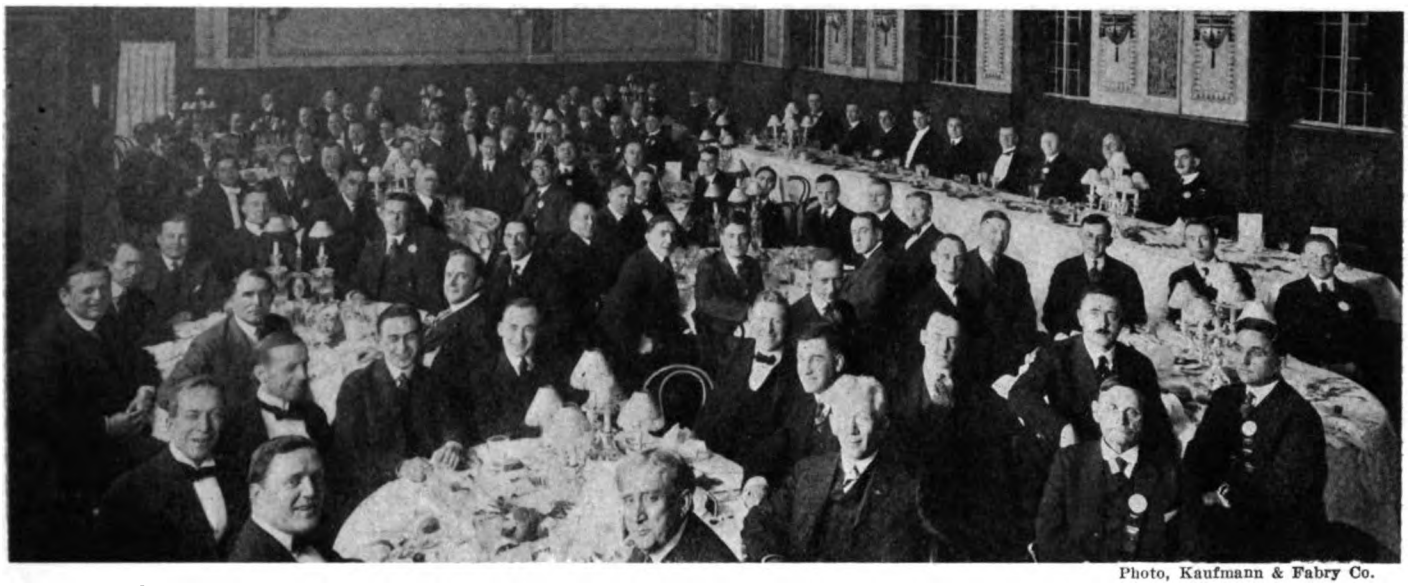
First Chicago Dinner to be Held by Liberty Dealers



Photo, Kaufmann & Fabry Co.

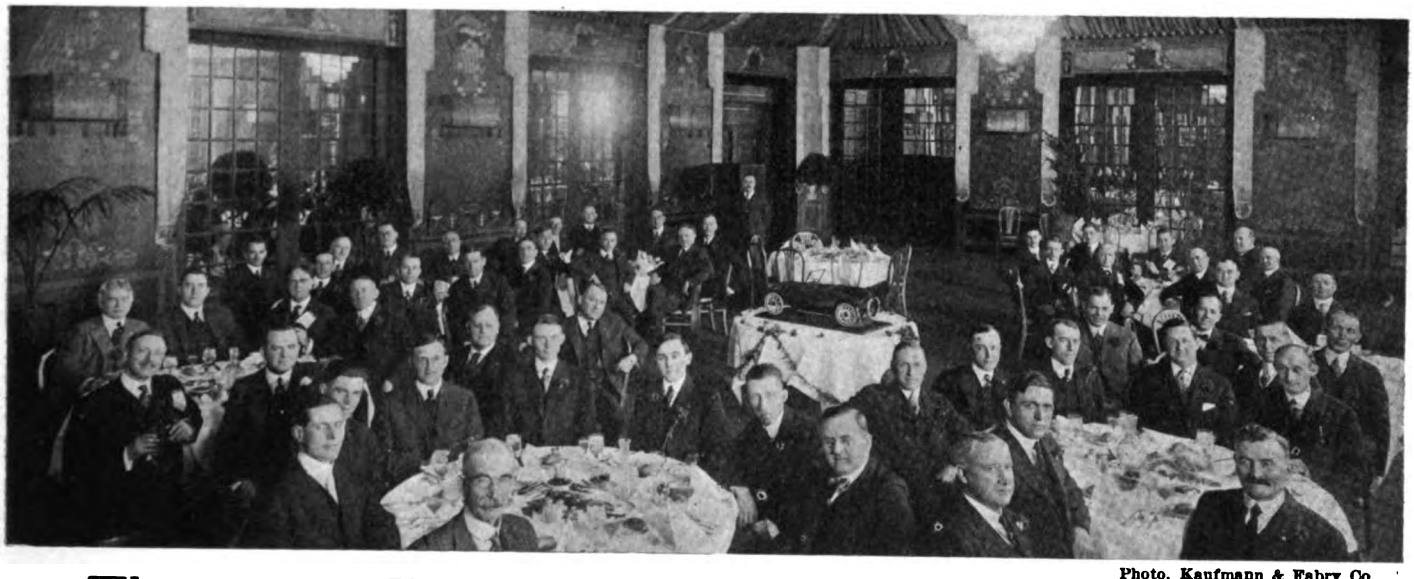
Sales and Service Representatives of Bosch Magneto Co.

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Photo, Kaufmann & Fabry Co.

Chicago Dinner of the Oklahoma-Farmer Stockmen



Photo, Kaufmann & Fabry Co.

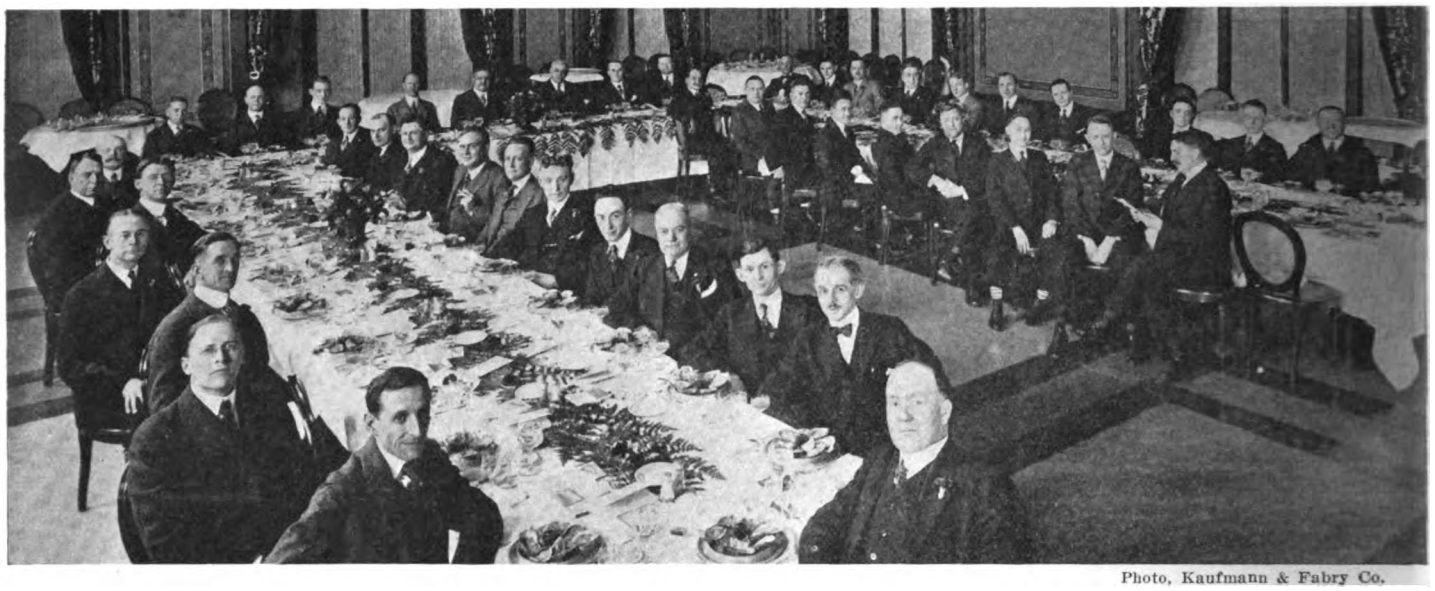
There was a Velie Car at the Velie Dealers' Luncheon



Photo, Kaufmann & Fabry Co.

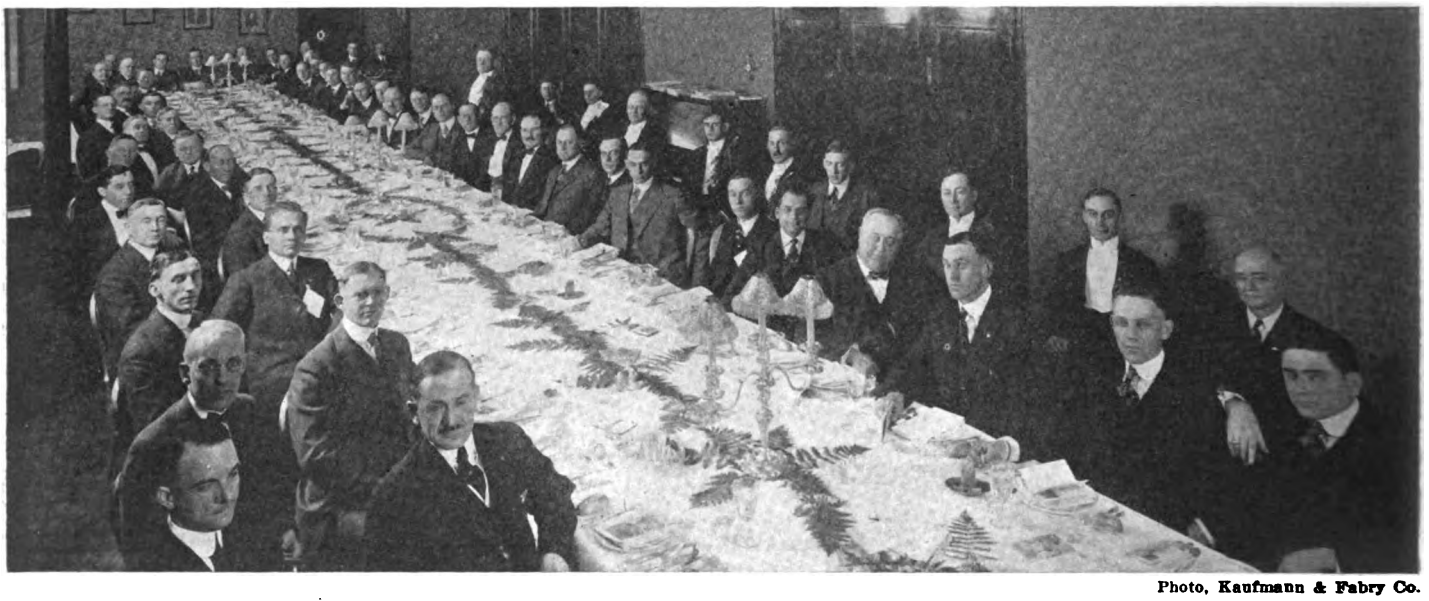
And This Room Holds Some of the Chalmers Men who Dined

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Photo, Kaufmann & Fabry Co.

First Banquet of the Maxfer Truck and Tractor Men



Photo, Kaufmann & Fabry Co.

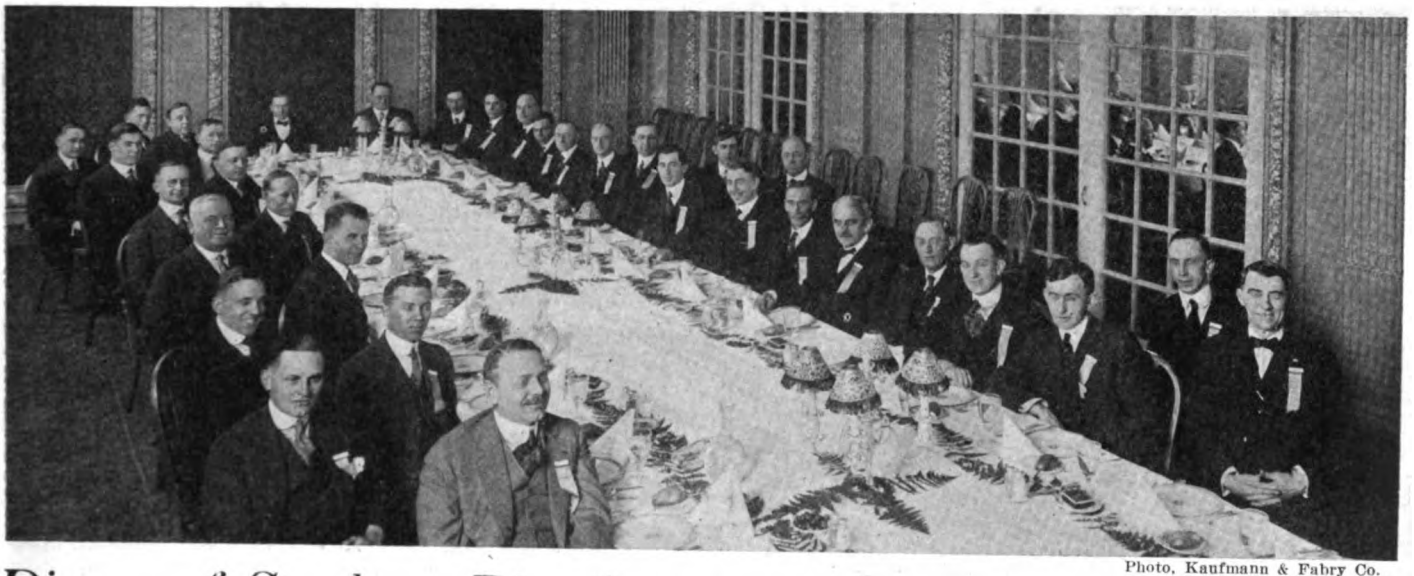
The San Antonio Dealers who Ran a Special Train to the Show



Photo, Kaufmann & Fabry Co.

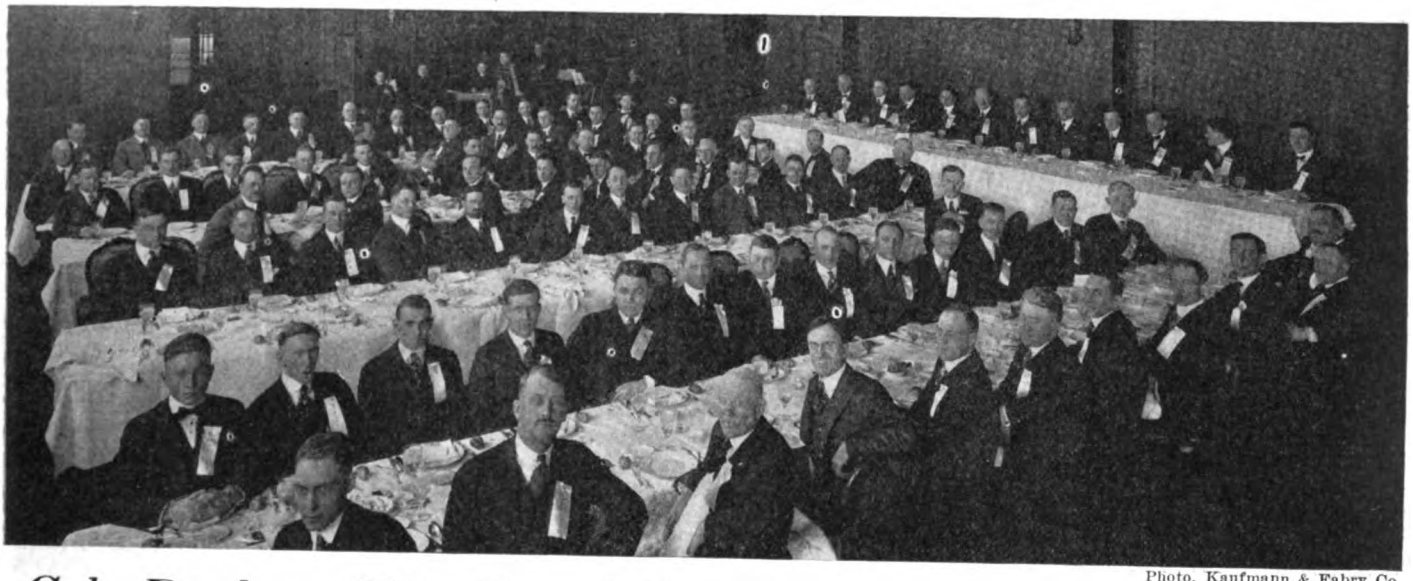
Even the Hats Proclaim This a Gathering of Nash Dealers

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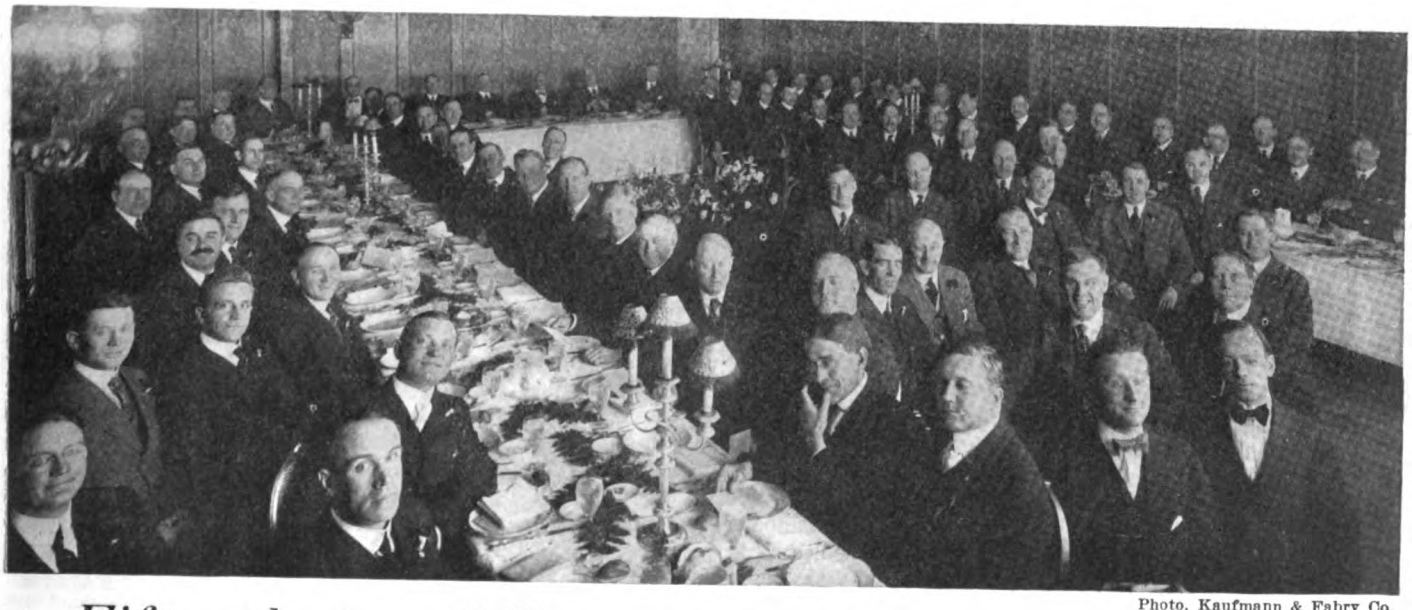
Photo, Kaufmann & Fabry Co.

Dinner of Southern Distributors of Smith Motor Truck Corp.



Photo, Kaufmann & Fabry Co.

Cole Dealers Who Dined Together During Chicago Show

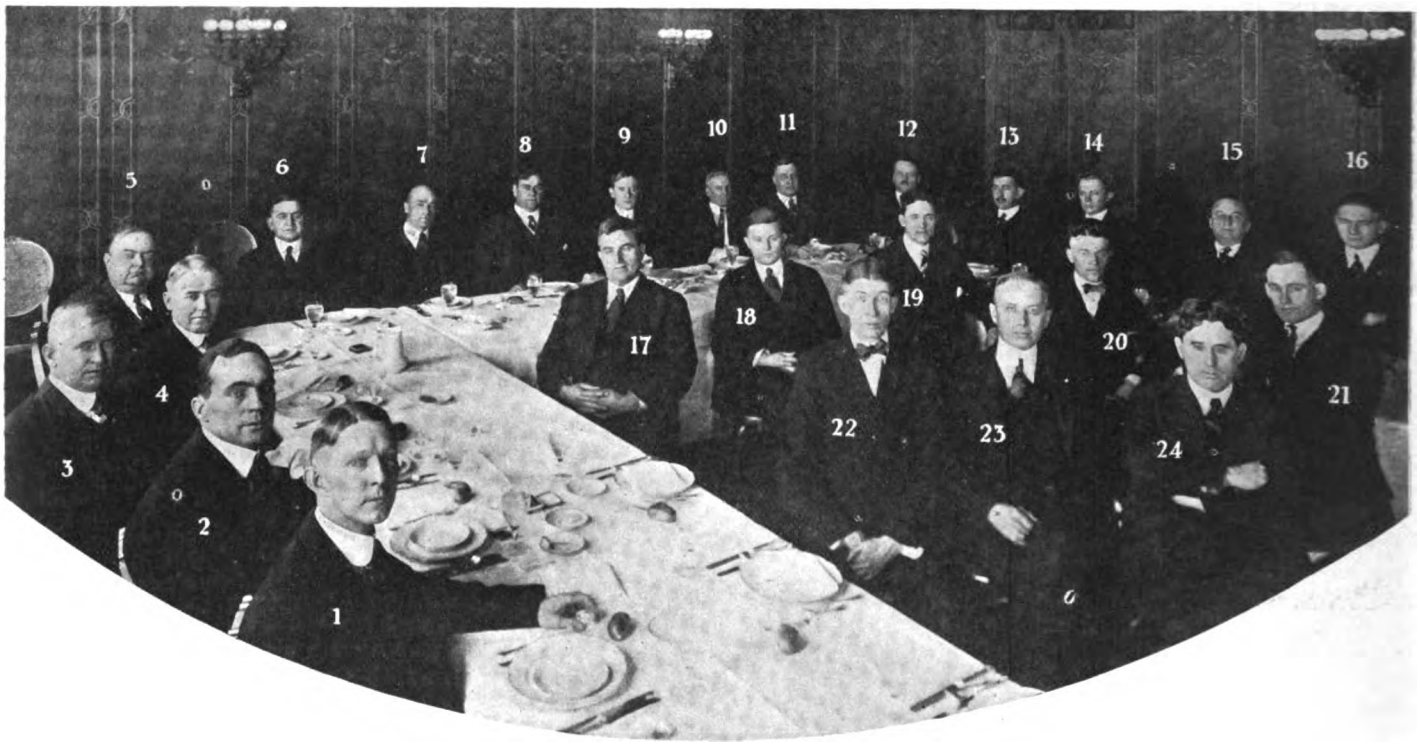


Photo, Kaufmann & Fabry Co.

Fifteenth Annual Banquet of Case Branch Managers

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The National Show Managers' Association *Is Born*



1. *E. L. Makibben, secretary, Cedar Rapids Automobile Trade Association.*
2. *E. W. Johnson, Denver, secretary, Automobile Trade Association of Colorado.*
3. *Prince Wells, president, Louisville Automobile Dealers Association. Chairman Show Committee.*
4. *J. A. Fleming, president, Sioux City Automobile Dealers Trade Association.*
5. *Edmond P. Hayes, secretary, Wichita Automobile Dealers Association.*
6. *Charles A. Myers, Racine Auto Show Association, show manager and former secretary.*
7. *Clarke G. Powell, secretary, Omaha Automobile Trade Association.*
8. *E. E. Peake, secretary, Kansas City Motor Car Dealers Association and president of the Show Managers Organization.*
9. *Ray W. Sherman, Motor World, New York, secretary-treasurer of the association.*
10. *Walter Wilmot, manager, Minneapolis show; staged by Minneapolis Automobile Trade Association.*
11. *Dean Schooler, president, Des Moines Automobile Dealers Association.*
12. *George W. Woods, advertising manager, Oklahoma City Motor Car Dealers Association's Show.*
13. *W. H. Vesper, president, Oklahoma City Motor Car Dealers Association.*
14. *Robert E. Lee, secretary, St. Louis Automobile Manufacturers and Dealers Association.*
15. *John B. Orman, manager of Indianapolis Show.*
16. *Leslie R. Lumley, secretary and treasurer, Automobile Trade Association, Champaign County, Ill.*
17. *A. C. Heath, president, Ft. Dodge Automobile Dealers Association.*
18. *T. D. Beard, assistant secretary, Chicago Automobile Trade Association.*
19. *H. G. Finch, secretary and treasurer, Clinton (Ia.) Automobile Dealers Association.*
20. *F. W. Griffith, secretary, Racine Auto Show Association.*
21. *L. B. Brandt, Clinton (Ia.)*
22. *George W. Tremain, secretary, Ft. Dodge Automobile Dealers Association.*
23. *F. Nagelvoort, president, Wichita Automobile Dealers Association.*
24. *David Beecroft, directing editor, Motor World.*

The following arrived after the photograph was taken: John J. Bell, secretary, Automobile Dealers Association of Pittsburgh, Inc.; Bart J. Ruddell, secretary, Milwaukee Automobile Dealers, Inc.; L. G. DeArmand, publicity man, Davenport Show; E. R. Carhart, Oklahoma Motor Car Dealers' Association.

CHICAGO, Feb. 1—The National Association of Automobile Show Managers was formed in this city Tuesday by show managers from nearly all the principal cities in the United States, as told briefly and exclusively in Motor World last week.

About 30 men attended a luncheon given by Motor World at the Congress Hotel and made the organization permanent. An exchange of ideas will result in certain improvements in several of the remaining shows of this season, and it is planned to hold a bigger meeting of two days or more next winter during the Chicago show. Meantime much data is to be collected and an effort made to establish a standard of show management.

The officers are: President, E. E. Peake, secretary of the Motor Car Dealers' Association of Kansas City and manager of the Kansas City show.

Vice-president, Bart J. Ruddle, secretary of the Milwaukee Automobile Dealers, Inc., and manager of Milwaukee's automobile shows.

Secretary-treasurer, Ray W. Sherman, Motor World, 239 West Thirty-ninth Street, New York.

Membership By Associations

Membership is to be by associations, so that a city may still be represented

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should it change managers. Or, the president or some other association officer may represent that show at the meetings.

The membership fee is to be the nominal sum of $10 a year, as it is not expected that expenses will be great, being mostly stationery and the gathering of data.

The Cities Represented

The cities represented were: Pittsburgh, St. Louis, Kansas City, Minneapolis, Milwaukee, Des Moines, Omaha, Indianapolis, Denver, Oklahoma City, Wichita, Fort Dodge, Sioux City, Cedar Rapids, Louisville, Racine, Champaign, Ill., Clinton, Iowa, and Davenport. Letters favoring the work were received from absent managers and secretaries in Boston, Albany, N. Y., Allentown, Pa Asheville, N. C., Baltimore, Bridgeport, Conn., Buffalo, Charleston, W. Va., Cleveland, Columbus, Ohio, Detroit, Duluth, Frankfort, Ind., Harrisburg, Pa Lancaster, Pa., Manchester, N. H., Montreal, Newark, N. J., New Bedford, Mass., Peoria, Ill., Pittsfield, Mass., Portland, Me., Rochester, N. Y., Scranton, Pa., South Bethlehem, Pa., Springfield, Ohio, Syracuse, N. Y., Toledo, Trenton, N. J., Utica, N. Y., Williamsport, Pa., Wilmington, Del., York, Pa

Not an unfavorable comment was received when the call for the meeting was made at the suggestion of Peake of Kansas City, and a number who were absent expressed their intention of attending if possible.

The discussion lasted until late in the afternoon, and managers who have spent years in the business found that other old-timers had worked out the best plan on certain points.

Because time shortened the meeting it is proposed to gather a lot of data and circulate it in bulletin form between meetings in order to save the time at the sessions.

The Topics Discussed

Prior to the opening of the discussion these topics and questions were suggested as pertinent:

1. Arrangement of shows in circuits.
2. Routing of entertainers.
3. Use of decorations in more than one show.
4. Publicity and advertising.
5. Method of allotting space.
6. Price of space.
7. Amount of refund.
8. Attitude of accessory makers toward dealers' shows.
9. Use of programs and their effect on merchants.
10. Class of entertainment.
11. Society day—good or bad and how handled.
12. Price of admission.
13. Should a show be profitable?
14. How are dealers' tickets handled?
15. How to get money through sale of admissions.
16. Trade paper solicitors.
17. Best time of year to hold show.
18. Passes for dealers.
19. Methods for preventing ticket abuses.
20. Uniform advertising plan for dealers during show period.
21. Selling tickets to exhibitors.
22. Building rentals.
23. Souvenirs.

As to show circuits something definite may be done before next season.

As to the re-use of decorations it was suggested that much could be accomplished in economy by letting decorating contracts to the same decorator, or that, with a week between certain shows, some of the same properties could be shipped from city to city, leaving an empty week for putting up and dismantling.

Small Shows in Circuits

Bart J. Ruddle, Milwaukee, told how the dealers of that city are arranging small shows in circuits throughout the State; and are shipping some of Milwaukee's decorators and are sending the decorator, carpenter and show manager to help stage shows in the territory handled by Milwaukee.

Decorations cost from little up to $10,000 and $15,000 per large show, and are all discarded after the show as a general rule.

As to allotting space, some allot by priority of membership and more by lot. The latter was conceded to be the most satisfactory.

The eyes of some cities were opened when it was found that some towns make between $20,000 and nearly $100,000 on shows, thereby financing the associations and making them strong.

The percentage of refund runs up as high as $100 and better.

Attitude of Accessory Makers

One of the hottest points of discussion was the attitude of an accessory manufacturers' association toward dealers' shows. This association is said to bar its members from the New York and Chicago shows if they exhibit in the dealers' shows. It was held by the show managers that the dealers' shows are where the goods are sold and from which makers can get the greatest benefit. The result has been in several cases that accessory makers are preferring the dealers' shows to the New York and Chicago shows.

In Milwaukee some makers have in the past, stated Ruddle, put their wares in jobbers' exhibits. Now exhibiting accessory jobbers are asked to submit a list of what they will show, and anything not listed is not admitted. If it gets in it is moved out.

The consensus of opinion, based upon practice, is that the program, filled with ads, is not good show business.

Entertainment should be dignified and not of the side-show variety.

Society day is still used by most shows, but a higher price for that day is less than heretofore. In some shows flowers are distributed to women and salesmen are asked to wear evening clothes.

Admission ranges from 25 to 50 cents on all days.

Show Should Be Profitable

That a show should be and may be profitable was revealed by such associations as St. Louis, Pittsburgh, Milwaukee, Minneapolis and Kansas City, all of which was interesting to some of the managers whose shows have been expense only.

It was requested that trade paper publishers devise some plan whereby managers may know who the legitimate paper representatives are.

There was a long discussion and much valuable data disclosed on handling the ticket situation.

The Kansas City plan of a signed pass and identification slips signed at the door at the time of entrance was considered good. Wilmot, of Minneapolis, favored his single-ticket-for-each-admission-plan. Most shows still use some form of button-and-return-check.

Inasmuch as there are numerous trade associations which hold no shows it was voted to include only those which hold shows in the membership.

Would Require Repair Register

AUSTIN TEX., Feb. 5—Among many bills, that have been introduced in the legislature affecting dealers is one by R. M. Dudley of El Paso, which requires every shop or garage within this state engaged in repairing, rebuilding or painting, as well as repairshops engaged in electrical work, to keep a register containing a complete and accurate description of every car upon which work is performed. The bill provides the manner in which this register shall be kept and makes it an offense punishable by heavy fine to fail to comply with all the provisions of the law.

Mammoth Garage for Cleveland

CLEVELAND, Feb. 5—What is reported will be the largest garage in the world will be completed in this city March 1, when the property of the Wigmore Coliseum will be taken over by a company headed financially by J. A. Wigmore, J. A. Smith, and C. F. Wills will manage the project. The new garage will accommodate 1000 cars. It will have 62,000 sq. ft. of floor space and will occupy two floors in the heart of Cleveland's shopping district.

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THE MAN Who Never Knew a Lady

By Ray W. Sherman

DO you let cigars and cigarettes block the way of the dollars that you want to roll into your business? Some salesmen do—but read the story, anyway.

FROM the center of the Middleport show arose a vaporous, filmy cloud of smoke, and as Reilly and Tommy Trumbull rambled around Reilly steered his course toward where the base of the smoke column seemed to be. Finally they found it.

The base of the column, the smoke generator, was in the midst of the Salmon exhibit and was trying as best he could, with his mouth and his one free hand, to explain to a smartly dressed man and woman that the Salmon was the greatest thing out this season and would be all sold out in the Middleport territory long before the shipping season had really begun at the factory. All of which was startling if true.

Why, the car even had something like a chiffonier built in behind the front seat; which was wonderful, despite the fact that several other cars at the show had nearly the same thing. But the smoke-generator pointed it out and the lady peered through the haze to see. What the designer of the car had made an oaken amber color looked to her somewhat buff, and what the salesman said were drawers looked to her like checks in the woodwork.

Anyhow, she looked. She did her best, despite the handicap imposed upon her by the man who was playing the part of salesman.

Finally she coughed, smothered it as best she could, made a gracious but hurried get-away, and moved off down the aisle, wiping her eyes with a dainty handkerchief, while her escort glowered.

"A rather exaggerated instance," remarked Reilly, as he and Tommy watched the end of the sales interview.

"I should say!"

"That lad must be in bad condition," asserted Reilly, jerking his thumb toward the salesman in the Salmon exhibit. "Guess he couldn't stand it any longer without a cigarette, and simply had to cut loose regardless of business. Some of the boys, though, make a nuisance of this smoking, at shows and in salesrooms. They act as though they'd never been in the presence of a lady.

"There's nothing, Tommy, that marks a lack of salesmanship and breeding any more, to my mind, than letting cigarettes and cigars block the way of the dollars that you want to come into your business. It is inexcusable. Not only do some salesmen smoke in exhibits and salesrooms, but they smoke at the same time they are talking to prospects. And some go so far as to hold a cigarette or cigar in their mouths at the very time they are trying to talk. That's not salesmanship, Tommy; that's plain boorishness.

Half-Dead Snipes

"And some of the boys leave half-dead snipes lying around in the hope they will be able to get back to them in a few minutes and get another puff, all of which creates a stink that wouldn't be tolerated in respectable circles. Sometimes it may be forgetfulness on the part of these smokers, but generally it's plain lack of knowledge as to the essentials of salesmanship. It is a lack of ordinary common sense.

"Would you walk into a clergyman's house smoking a cigarette? No. And why? Because you know he doesn't like it. Would you carry a smoking cigar into the office of a man with whom you wanted to close a deal? Not if you had any sense. And why not? Because you know he may not like smoke and that if he doesn't the carrying of the cigar may affect your deal. Then, why would a salesman smoke when trying to sell cars? If this has any chance of affecting a sale adversely isn't the salesman talking money out of his own pocket by smoking in the faces of customers or prospective customers?

"A good salesman doesn't do these things. If he does he isn't a good salesman and there is no rule by which he may kid himself into believing he is.

"Primarily, the salesmen are to blame for this smoking in exhibits. If they set up real rules of salesmanship for themselves and lived by those rules they would remedy all these things themselves; but since they don't lay down rules of sales efficiency someone else has to do it for them, and until these salesmen get to be masters of themselves they will always be bossed and bound by rules that other people make. They never can be anything more than employees.

"But since someone else has to make these rules, the job is up to the dealer who operates the exhibit. He certainly has the right to tell his salesmen what is right and what is wrong, and any salesman who won't co-operate with the dealer in sales work is valueless. Co-operation is a first essential to complete business success. No matter how good that salesman is he might better be moved out, for in the end he will have to be dispensed with anyway. The dealer may think he can't get along without him, but this same dealer should ask himself what he would do if that supposedly indispensable salesman died to-morrow. Would the dealer quit business? Hardly. There isn't one of us, Tommy, so valuable that things wouldn't move about as usual if we dropped off the face of the earth. People have been dropping off ever since the world began.

Some day "Teddy" Roosevelt will die and the world will go on just the same."

COMING

The Man Whose Legs Were Wood

—*Watch For It*

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Anyhow, she looked. She did her best despite the handicap imposed upon her by the smoke generator —the man who was playing the part of salesman.

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Winter Business

Men of Action Win

Cross the Line a Winner

Winter's Days Are Passing! Are You Making Money or WAITING?

MORE than two months of opportunity have been laid in your lap. What have you done with them?

Have you made money this winter? Or have you done as hundreds of others have done in years past and merely sat and waited for spring, with your repairshop running at a loss, your car sales department doing nothing and your whole establishment skimping only on a flat tire in gross inefficiency?

The whole darned thing is UP TO YOU! Don't try to pass the buck. The man who pulls in his lines when the first snow flies and sits by the fire and waits for spring is just plain inefficient, that's all. There is no alibi for him. He is his own worst enemy.

If you haven't made money this winter get busy and START NOW. If you have been making money KEEP IT UP. Don't slacken! You have laid the foundation for future success in many ways. You'll learn of it later. Meantime: (*See below*)

Send Out This Letter

Dear Mr. Prospect:

In the operation of your Chevrolet there are certain devices which add to the pleasure of touring, and which you may from time to time wish to add. Some accessories are suited for your Chevrolet and some are not.

We have investigated the situation and are prepared to recommend certain accessories for use in and on the cars we sell—one of which you are using.

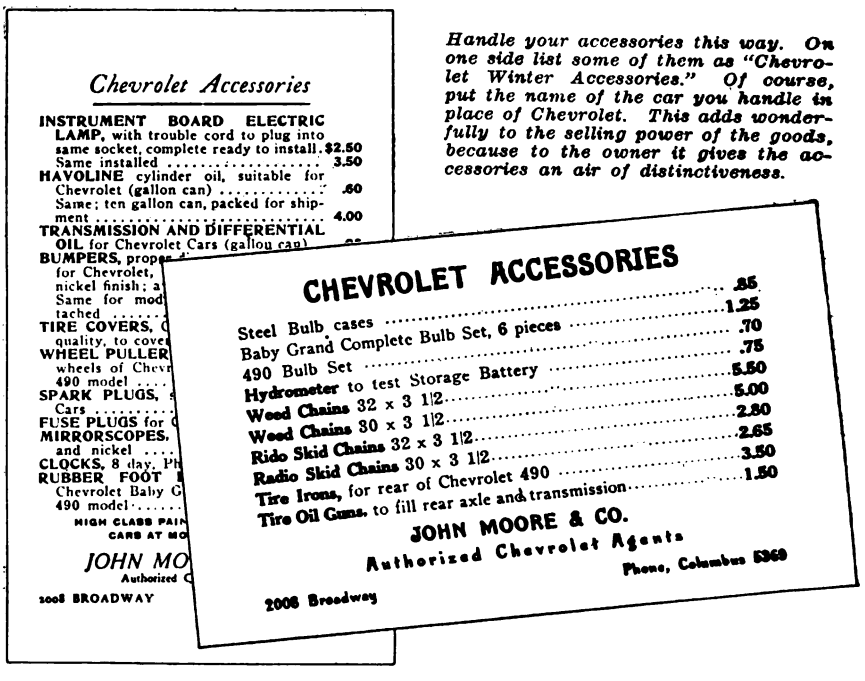
Some of these accessories we have grouped on the card we are enclosing, with their prices in our store and installed in the car. These we guarantee will give you satisfaction. If they don't—ask for your money back and we shall gladly give it.

One side of this card lists Winter Accessories. These will add greatly to the comfort of your driving while the weather is a bit cold. We are sure you will find satisfaction and comfort in them.

Besides these there are others in our stock we should like to have you look over. Our car heater is one of the most popular articles we ever carried and you can best appreciate it by riding a few blocks in my own car. Drop in and try it. Or phone for it.

Our phone is James 1923.

Yours truly,
BURT'S GARAGE,
Harvey Burt.



Handle your accessories this way. On one side list some of them as "Chevrolet Winter Accessories." Of course, put the name of the car you handle in place of Chevrolet. This adds wonderfully to the selling power of the goods, because to the owner it gives the accessories an air of distinctiveness.

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HAVE YOU Thought of Spring?

IT will be spring before you realize it.

Once winter begins to break things go with a rush like a sand dam with a hole in it, and spring is here with its rush of business. Then the dealer and garageman are buried with business. Orders for repairing and cars and accessories and everything else come pouring in and the tradesman is lucky if he stands up under it and gets through without losing money on poorly done rush jobs, costly overtime and orders lost because of the downpour—though the warning was given.

Right now you may be rather idle. The rush hasn't begun. You have more time now than you will have later. Therefore, there are certain:

—Things You Must Do—

1—Cash Spare Time

YOU confidently await the coming of spring, knowing it will bring a rush of business. It is fine to get ready for this rush; but why not get some business NOW? Why spend the interval in WAITING? Time and brains are all God has given each of us, and if we waste ANY of the time we have shot part of our ammunition without any result whatsoever.

See if you can't sell some cars between now and the spring rush. See if you can't get some overhaul jobs into the shop. See if you can't dispose of a lot of accessories. See if you can't get a better list of spring prospects lined up. Study your whole business. See what can be done between now and the first rush days.

DON'T BE IDLE JUST BECAUSE IT'S WINTER.

Have You Read The Reilly Story?

See Pages 16 and 17

2—Get Your House in Order

HOW about your building, your salesroom, your garage, your shop, your office and the other parts of your establishment? Are THEY ready for spring?

Does your garage need fixing up? Are there broken windows? Are there holes in the floor? Does the interior need a new coat of white paint? Is your wash rack O. K.?

Better fix things NOW while you have time.

Do you need some new machinery in the shop? Does some of it need repairing? Is your time and job record system satisfactory? Are you sure of enough workmen? Have you GOOD workmen?

Better fix things NOW while you have time.

Is your salesroom bright and new and clean? Does the floor need refinishing? Does the interior need painting? Are your show windows the best in town? Are they well lighted?

Better fix things NOW while you have time.

Is your office shipshape? Have you a good business and accounting system? Are your letters well done and neat? Have you a good prospect and follow-up system? Are you ready for the spring rush of car buyers?

Better fix things NOW while you have time.

Go over everything. Consider your road signs, curb equipment, advertising, display and all else.

GET READY NOW!

3—Speed Up

RUNNING a business in the ordinary way is one thing. Running it at 100 per cent efficiency is another thing. Right NOW investigate your speed and capabilities for speed. Have you been going as fast as you could? And have you been working efficiently? Or have you worked without a good system and plan? Most of us—with benefit to ourselves—could do a lot more than we do. The first requisite is to give our complete selves a good "once-over" and see if we haven't been dragging one foot a little.

SPEED UP!

Overhaul Letter

Dear Mr. Prospect:

It is of importance to you that you give attention at this time to getting your car ready for spring.

It is the experience of most motorists—I know it has been mine—that a whole lot of little things that need to be done are discovered only after the car has been run out onto the road for the first time. And then we don't want to stop to bother.

It is a great pleasure, when you run your car out for the first time, to realize that the motor is in tune, everything greased and oiled, the body shining like new, the upholstery sweet and clean and the tires ready to carry you a good way through the summer season.

Later, when the spring rush comes it is difficult to have all these things properly done because everybody wants the same thing at the same time and it is like lunch time in a busy restaurant.

We suggest that you take up with us the matter of having your car inspected as a measure of preparedness. We can give you prompt service now. Later we won't be able to do so well.

Our phone is James 1923.

Very truly yours,

HARVEY BURT,

BURT'S GARAGE.

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Accounting and Business System

By T. W. Snead

Paid on Account

Editor Motor World: Would like for you to show the proper way to carry a charge and use the following for example: John Jones purchased Jan. 10, 1917, 10 gal. gas, $2.10; 2 hours' labor, $1.20; 1 casing, 34 x 4, $25.45. Total, $28.75.

On Jan. 12, 1917, paid $20; on Jan. 15, 1917, paid $8.75.—R. L. Davis, Blandinsville, Ill.

The entire charge of $28.75 is placed under customer's account on the debit side of form 1 when the sale is made, and this sale is split up on the credit side into $2.10 for gasoline, using salesslip No. 202; $1.20 for repairs, using salesslip No. 100, and $25.45 in the parts and accessory department, using salesslip No. 87.

On Jan. 12 John Jones paid $20 on this account and the $20 is entered under all cash received and on the credit side is entered under customer's account, placing his name in the name column.

On form 3, which is headed with Mr. Jones' name, you will find this charge of $28.75 on the debit side has been placed in the charge column and the credit which was taken from the credit side of form 1 under customer's account has been placed on the credit side and the difference between the two columns is shown in the balance column as $8.75.

On Jan. 15 Jones paid $8.75, which is treated like the payment of $20 and credited on form 1 under customers account; after this amount has been transferred to the John Jones sheet you will notice that the balance on the sheet is shown as zero.

Posting Forms 1 and 2

Editor Motor World: Please advise as to posting from Forms 1 and 2.—Herman Auto Co., Sandusky, Ohio.

If you will refer to page 30 of the System Pamphlet you will notice in the table No. 2 that the total of the columns found on forms 1 and 2 have been carried forward to the account under the heading "what happened in January."

For example, opposite the word cash you will notice that the figure under the column "All cash received" on form 1, which amounts to $3,616.85, has been carried forward to the debit side of these columns and all cash paid has been charged forward to the credit side, which figure amounts to $2,926.01, the difference between the cash paid and cash received being $490.84 increase, and this added to the cash balance you started off with on Jan. 1, which amounts to $323.50, will give you the amount of your cash as it should show at the end of the month—$816.34.

We suggest that you do as a good many garages are doing—open in the back of your binder a statement for each one of your assets and liability accounts such as cash, accounts payable, notes payable, gasoline stock, etc., etc., and post to the debit and the credit side of these accounts the total which you will arrive at at the end of the month on forms 1 and 2.

After you have balanced your forms 1 and 2 and these items in the results are posted in the back of your binder you will make what is known as a trial balance, that is, you list all of your debit accounts on one side and all of your credit accounts on the other and the two should equal to a penny.

Changing Over

Editor Motor World: I have been studying your system booklet and expect to install the system this spring.

As I understand it, in changing over, the entire inventory would be debited to "All other accounts," form 1, and customers' ledger balances to "Customers' Accounts." Then the inventory would be split up and credited to departments to which the stock applies. Ledger balances bunched and credited to "Customers accounts."

Then a form 3 sheet is opened for each account in the ledger showing a balance. Then debit inventory on sheet 2 to departments as credited on form 1, entering all tools in "All other accounts" as equipment.

Bills payable are credited with both inventory of stock and equipment and ledger balances, assuming that all claims against the business were settled before changing system.

I do little or no storage business but have a vulcanizing department which I would like to keep tabs on separate from other repairs, also have cars for charter. How do you advise caring for these two? I thought of putting storage into "All other accounts" and use storage rulings for vulcanizing, but where does the charter space come from?

In re the forms 1 and 2. Are they printed on one side only? I can see that the left half of each could be printed on the reverse of the right half, thereby saving one leaf each time a new day or week was opened. There isn't anything to show how it is and I was a bit curious. How do my letterheads suit you? How would you advise changing to get in the name of a car I expect to handle?—J. W. Bageard.

In order to start the system it is not necessary to enter any of your figures covering your assets or liabilities on either form 1 or 2. These forms will record only your transactions from the date you adopt the system, and the result of your operations as shown by these two forms are charged and credited to your asset and liability accounts at the end of the month.

In order to start the system if you will refer to pages 29 and 30 of the System Pamphlet it will give you a better idea of what we are trying to explain. That is, you start with your cash account and determine to a penny what this amounts to on the first day of the month. You must ascertain the total amount of your accounts receivable due from your customers and likewise the total amount of your gasoline, etc., and car stock on.

You would also estimate your plant and equipment, which will include your machinery in the repairshop, as well as the desks and furniture in your office. All of these accounts are known as your assets, and in the same manner you would ascertain your liabilities, which are such accounts as amount due or bills payable to others and all notes payable.

If your concern is a corporation the capital stock outstanding would be another liability, and if it is a proprietorship or a partnership the amount invested by the proprietor would be one of your liabilities.

Determining Profit and Loss

After you have determined each one of your asset and liability accounts and have totalled up the assets and the liabilities you will arrive at a figure which will be the excess of your assets over the liabilities.

In this case you would open an account under liabilities for your surplus of profit and loss, which is the excess of your asset accounts over all of your liability accounts. If your liability account exceeded your asset accounts you would open an account called surplus deficit, which would be your loss.

After this has been determined and you have opened accounts, using form 3 in the back of your ledger for each one

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of these assets or liability accounts, you would then operate the system as described in the System Pamphlet until you arrived at the end of the month. Then the result obtained from the use of forms 1 and 2 would be charged to or credited to these various accounts following the explanation, as shown on pages 29-30 of the System Pamphlet, an example of which you will see in the ruled columns at the top of page 30.

"What Happened in January"

For example, you started off Jan. 1 with an amount of $325.50 cash in bank, and from form 1 you get the information which is in the column headed "What happened in January," in other words, you put into your bank $3,416.85 and you withdrew from your bank $2,926.01, which is an increase put in the bank of $480.84, which added to the balance that you started with on Jan. 1 gives you a bank balance at the end of the month of $816.34.

All of your assets and liabilities accounts would be determined in this way, using the information that you get from forms 1 and 2.

You would not debit the inventory or stock account on form 2 unless you made a purchase of some stock which would be debited to stock accounts, and your credit would be either to your cash paid out or also to accounts payable in all other accounts column on the credit side. This will also serve to answer your next paragraph, in which you ask about bills payable.

Charging Up Bills

When you incur a bill it would be charged either to the stock account or to some expense account under the various departments of expense and the credit would be to bills payable under all other accounts. The following month, when this bill was paid, the debit would be to bills payable to all other accounts on the debit side, which would offset the credit that you made the previous month.

If you are doing practically no storage business we suggest that you use this column for rental of your cars and use the miscellaneous column under income for your income derived from vulcanizing as separated from the repairshop.

Forms 1 and 2 are printed on both sides, and, as you suggested, this is done in order to save one entire sheet.

Your letter-head is a neat and well balanced advertisement of your business, and we can suggest only one change, and that is that you eliminate the line following the name of the town, Dexter, N. Y., and running to the year 1916. The reason for this is that all up-to-date stationary is supposed to be used on a typewriter.

Gas Used in Shop

Editor Motor World: How am I to tell from my income account pages just which items have been posted to my customers' accounts and which have not? There is no check column provided, and as none of the pages are numbered I am at a loss to know what to do.

In keeping record of all gas taken from the tank it is necessary to show gas used in the shop. Just how should this be charged? Thus far I have debited column No. 4, Gas Dept., and credited column No. 9, all other accounts in the expense accounts.—R. Hayden.

On the debit side of form 1, under customers' account, charge amount you enter all charge sales made to customers, and the credit goes under the income account on the other side of form 1. Now when you post these accounts to the customers' ledger sheet I would suggest that as they are posted that you place a little check mark by each account. In this way you will know what accounts have been posted to the customers' sheet and what have not.

In answer to your question in regard to gasoline taken from the tank and used in the shop, we advise that this gasoline be treated simply as if you made a sale to a customer. Use one of your ordinary sales tickets and instead of charging the gasoline to a customer charge it to a shop department, and instead of charging it at the sales price charge it to the shop at the price which you paid for it, which is known as your cost price.

This charge is made on form 1 and instead of placing the amount under customers' account, charge amount, you would place the charge under all other accounts on the debit side, making notation in explanation column that it is for shop expense, supplies, and the credit would go under the income account similar to those charges made to customers. The only difference being that it is made at the cost price instead of the sales price.

Posting Invoices

Editor Motor World: We are installing your system of accounting and are puzzled as to where to post invoices. For instance, we receive an invoice of goods of the Auto Supply Co. for $12. Where do we post this item? The bill is due the 10th of next month. And we also returned a pump to the supply company for credit. Where do we post this credit?—A. E. King.

Suppose that you have received an invoice amounting to $12. You would turn to form 2 at the end of the month before you close this out for the month in which you are working, and you would credit under all other accounts on the credit side the Auto Supply Co. Bills payable $12, and on the debit side you would place this amount under stock account with the notation that it was accessory stock or whatever classification you would style the stock. On the following month, when you come to pay this bill, your credit would be, of course, the check that you draw, and your debit would be to bills payable, Auto Supply Co. This debit in the month in which you are working would offset the credit that you had made on form 2 the previous month.

When you return merchandise for credit it would be entered on form 1: Under all other accounts on the debit side you would charge bills payable Auto Supply Co., and under all other accounts on the credit side you would credit inventory stock account, with the explanation pump returned to supply company for credit. This charge to the supply company on the debit side under all other accounts would then be posted to your accounts payable sheet in the back of the ledger, which would partly offset some bills which you owe the supply company, which amount would be taken from form 2 on the credit side of all other accounts called bills payable.

We are assuming that you use form 3 in the back of your ledger to record debits and credits to accounts payable as well as accounts receivable due from your customers, which you run under the alphabetical list or index tags provided with the system.

Posting Deposits

Editor Motor World: As we are trying to install your bookkeeping system we cannot make out where to post the deposits. We make deposits with two banks, and that is the way we always balanced our cash before, and by just balancing by checks we cannot tell how much cash we have on hand.—T. L. K.

There is no provision made on our forms to carry two separate bank accounts, and I suggest that you use a separate sheet of paper on which to analyze your receipts and your withdrawals of cash, entering the total receipts on form 1 and all the cash received, and on this separate sheet, separating this total amount into two deposits each day and likewise your withdrawals, making the figures on your sheet agree in total with the figures as shown under all deposits on form 1 and all disbursements on form 2.

Maxwell Non-Stop Car Does 23,600

BOSTON, Jan. 26—After being on the road day and night since Nov. 22 the Maxwell non-stop car was checked in at City Hall here at noon to-day and Mayor James M. Curley pulled out the plug that brought the machine to an end. It had been running 1560 hours and covered 23,600 miles in that time. It had been on the road just 65 days. As no sanction had been asked from the A. A. A. and a corps of expert observers was not employed the company is not claiming any records.

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ANGLES OF THE LAW



By George F. Kaiser

Organization Pitfalls

Editor Motor World: Nearly 3 months ago I left a good position and started to organize a small corporation for dealing in automobile supplies. The capital was to be $20,000, with $5,000 in shares paid in to start operating.

I made a clear plan of the manner in which the $5,000 was to be invested and had several copies made, showing them to people I wished to interest. The first one whom I interested took two shares and gave me a letter to that effect, mentioning that the offer was good only until Dec. 25; after that date he would have the right to reconsider the matter. As he was a prominent man in this town, I used this letter in my work of getting the shares taken, several others signing their names on the same letter and enumerating the shares they would take. I also agreed to take one share.

I succeeded in having all shares taken before Dec. 25, and we had a meeting in the presence of a lawyer, who had the act of incorporation drawn up. Each shareholder read the clauses of the company, was satisfied and signed his name. The officers were selected and I was appointed manager and assistant treasurer.

Secretary-Treasurer Pulls Out

The next day the secretary-treasurer (who at the time of incorporation was the most enthusiastic of all) told me he had been thinking the matter over and had come to the conclusion that he had not time to do the work of secretary-treasurer of the corporation and at the same time said he wished me to find someone else to take his share. As it lacked a few days of Dec. 25, I told him this could not be but that he could resign his position and sell his share whenever he wished. He next called the lawyer on the phone and told him not to send the act of corporation to the capital, and went to many of the other stockholders, told them he had been studying the matter well and had come to the conclusion that the business could not start on $5,000 and would surely be a failure. As he is a large merchant in the town, the others took heed of what he said and would not listen to me, in spite of the fact that I have good experience in the business. They called a meeting and dissolved the corporation.

I would like to know if I have not a right to some indemnity from these people, as they all took shares after studying the plan I gave them, which included investments, minimum business that probably would be done, probable gains, expenses and profits.

During the time I was reorganizing this corporation I spent over $400 and put in a lot of hard work, refusing several good positions that were offered me. One position as manager of a good business in this town I refused the same day that I had the last share taken, saying that I had given my word to these people and could not draw back. I am only a poor man and most of the others are wealthy and cannot realize the harm they have done me.

I cannot say for sure, but it has been suggested to me that the secretary-treasurer wished to dissolve the corporation and start in business for himself after having seen my plans, the profits to be made on different articles, etc.

I suppose you have, or can obtain, a copy of the laws of Porto Rico, and shall be very glad to hear your views on the matter.

If you think this subject would be of interest to other readers you are at liberty to publish it.—Norman P. Hapgood, Ponce, Porto Rico. (Box 346.)

I cannot find from your letter whether the proposed corporation was actually incorporated or not. Of course, if your services were rendered as a promoter, and you were trying to form a corporation without any agreement as to how you should be paid for your services, you will not be able to be paid for them now.

While the fact that these people did not proceed with the corporation as you expected they would is undoubtedly a hardship on you, I am afraid you have no legal right to recover for your services or for the money you spent. Why don't you go to some Porto Rico attorney and see if he will not take your case on a contingent fee—that is to say, that he will not charge you for his services if you cannot recover anything, but will take a percentage of anything you may recover.

Who is Responsible?

Editor Motor World: We have your favor of the conditional bill of sale as published in Motor World, Vol. XLIX, No. 10, page 17, and note by it that the title of the car remains with the vender until the entire sum is fully paid, and we wish to ask your opinion on the following hypothetical case and how the resulting responsibility can be avoided.

A car is sold as per agreement of conditional bill of sale; after the balance is about half paid the car, in the hands of the purchaser, kills a person, the responsibility and blame being entirely on the driver, who, of course, carries the State owner's certificate. Suit is brought against the owner of the car (the car being uninsured against such liability), and the driver, to relieve himself of the responsibility, declares the dealer to be the owner and exhibits the conditional bill of sale as proof of his statement.—Leigh Robartes, Port Jefferson, N. Y.

If the driver were employed by and acting for the dealer at the time of the accident the dealer, of course, would be responsible. If the driver were acting for the purchaser the purchaser would be responsible. The mere fact that there was a conditional bill of sale would have no bearing on the liability for the accident, as that is determined solely by ascertaining whose agent the chauffeur was.

Common Law Lien

Editor Motor World: Will you please advise if we are within our rights in case a customer who owes us an overdue account brings his car into our repairshop for repairs and we refuse to deliver the car until the bill has been settled?

We presume that this matter already has been investigated by you, and we would greatly appreciate this information.—Auto Sales Co., Wheeling, W. Va.

You have a common law lien in your State; that is, you have the right to retain possession of the car until your bill is paid.

If you let the car go out of your possession you, of course, lose your right of lien. You do not mention any chattel mortgages or claims of ownership by third persons. If there is any question of this kind it will not be safe to proceed except under the direction of your local attorney.

Need Not Register Conditional Sales

The Supreme Court of South Carolina has just decided in a recent case that conditional sales are valid even though the conditional sales contracts are not registered. This decision is naturally of great interest to local dealers.—Standard vs. Ellington, 90 Rep., p. 564.

Must Record Chattel Mortgage

The Supreme Court of North Carolina holds that in order for a person holding a chattel mortgage to recover under it he must show that it was properly recorded, North Carolina having an enactment making registration necessary, in Rev. Stat. 1905, Sec. 982.—Foy vs. Hurley, 90 S. E., p. 583.

Have You Read the Reilly Story

See Pages 16 and 17

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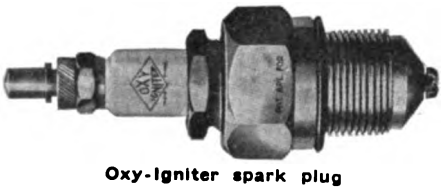
Accessories & Supplies



OXY-IGNITER SPARK PLUG

Oxygenerator Co., 1919 S. Michigan Ave., Chicago. PRICE, $1.

A porcelain spark plug of substantial design with the electrode terminating in a four point fish hook from which the spark jumps to the closed end.



Oxy-Igniter spark plug

DENVER TRAFFIC SIGNAL

Denver Traffic Signal & Mfg. Co., 131 Fifteenth Street, Denver. PRICE, $5. Installation costs approximately $1.50.

An electric signaling device mounted on the rear fender to give warning that the driver is about to turn or stop. It consists of a pressed steel box with a red lens in it and a metal flag on top. When the button on the steering wheel is pressed by the driver the flag is raised and the lens is illuminated so that the device signals by day or night.



Denver traffic signal

BANKER TRUCK WINDSHIELDS

Banker Windshield Co., Ellsworth and Negley Aves., Pittsburgh.

The No. 11 rain vision truck shield is a two-piece design, the upper member being swivelled near the top so that it may be swung out to give the driver a better view of the road when it is raining. It is extra heavy throughout. The friction hinges are fastened with wing nuts. The glass is set in a rubber channel which in turn is carried in a heavy brass tubing. The finish is black enamel. Price, without filler board, 29 x 40½ in., $26.50; with filler board, $28.50; size 32 x 40½, without filler board, $28.50; with filler board, $30.

POLAR DRAWER TRAY

Polar Mfg. Co., 101 N. Marshall St., Philadelphia.

This drawer tray is designed to be placed in the front of the center drawer of the desk and has compartments for holding various small articles and a larger compartment for pencils and pens. It is built in different sizes to fit different drawers.

NAFRA WARNING SIGNAL

Nafra Co., 120 Broadway, New York. PRICE, $12.

This signal warns drivers in the rear of slow downs and is automatically brought into operation by the application of the brake. It consists of a red circular disk illuminated at night and normally hidden behind the license tag, but when the brake is applied swings and waves from side to side as long as the brake is applied. The waving is due to the fact that the disk is mounted on a very flexible arm and connection between it and the brake pedal is by a Bowden wire and cable.

NEW ADAMS-BAGNALL HORNS

Adams-Bagnall Electric Co., Cleveland.

A new motor driven electric horn and an improved vibrating type have been brought out. The new motor horn is adjustable as to tone. The call is insistent, yet not harsh. All details have been carefully developed, the diaphragm, the ratchet, the oiling system, brushes, coils have all been tested to give maximum service. The armature and field coils are treated under vacuum to secure perfect insulation. All parts are accessible. Price, $4.50. The vibrating horn is in the main unchanged, but has been simplified and improved in many minor details.

CLIP-ON ACCELERATOR

E. F. Von Wettberg, Bridgeport, Conn.

This accelerator may be attached with a screwdriver. There are no holes to bore or parts to be fitted. It consists of a wire pedal which is carried in a metal pad screwed to the floorboard, the connection to the carburetor being through one of the pedal slots in the floorboards.

HOUPERT PISTONS

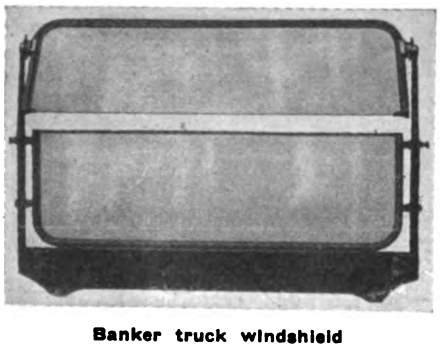
Houpert Machine Co., 351 West 52d St., New York.

Pistons for all cars are manufactured both in standard and S. A. E. oversizes. Pistons are classified according to three types and blueprints are issued with blank dimensions so that order can be given accurately by mail.

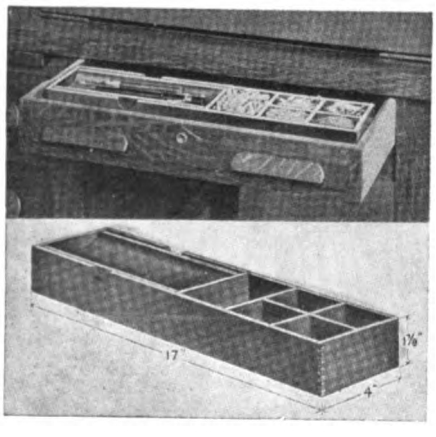
HERRIOTT'S DRESSINGS

Herriott's Shoe Polish Co., 2801 N. Broadway, St. Louis, Mo.

A waterproof, black dye and dressing for all automobile tops sells for $3.50 per gal.; qts., $1; pints, 60 cents. It is said that it will not smut or rub off even when wet. It will dry in 10 minutes. A special dressing for Fords sells for 60 cents per pt.; $1 per qt.



Banker truck windshield

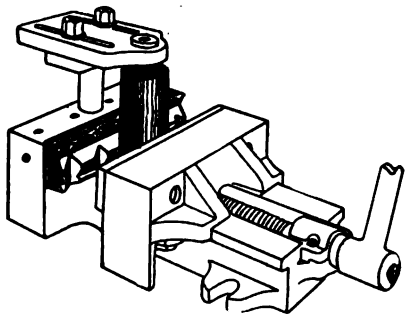


Polar drawer tray



Nafra warning signal

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Graham drill vise

GRAHAM DRILL VISES

Graham Mfg. Co., Providence, R. I.. PRICE, $20 up.

These drill vises are made in several sizes and are designed for use on drill presses and other machine tools. They can be clamped to any part of the bed plate and hold the work firmly in place. Jig attachments are also furnished.

SEALWELL PISTON RINGS

Sealwell Piston Ring Co., Davidson Bldg., Sioux City. PRICE, $1 to $1.50 for ordinary sizes.

This is a two-piece ring in which the section of each piece is a triangle, the two together forming a rectangle which fills the groove. The movement of the piston back and forth in the cylinder causes a wedging action which expands the ring tightly against the cylinder call, yet this action is not sufficient to increase the piston friction perceptibly.

AITCHANDEE SHOCK ABSORBER

H. & D. Co., Goodland, Ind., PRICE, $10 per set of four.

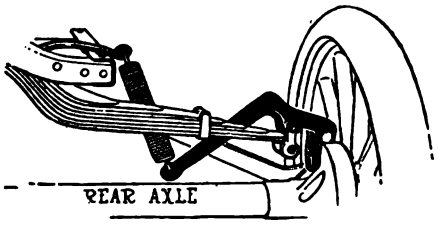
This is a supplementary spring type of shock absorber for Fords in which a spring shackle is replaced by a lever to which is attached a heavy coil spring, under tension.

FULTON MUD HOOK

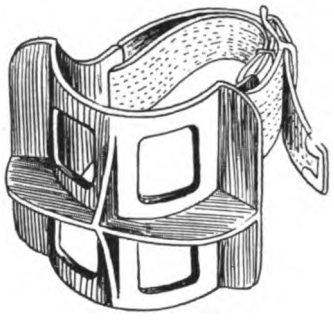
The Fulton Co., 721 National Ave., Milwaukee.



Raybestos suits for mechanic or motorist—dirt-proof



Aitchandee shock absorber



Fulton mud hook

These are for giving traction in soft mud. They are paddle shaped and one or more may be strapped to the tread of the tire at intervals. They can be put on or removed in an instant. They are made of malleable iron and will not turn on the tire.

RAYBESTOS AUTO SUITS

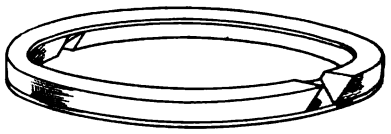
Raybestos Co., Bridgeport, Conn. PRICE, fine weave, olive, khaki, tan, $2; medium weight, $2.25; heavy weight, $2.50. Prepaid east of the Mississippi.

A one-piece suit roomy enough to go over ordinary clothes and affording complete protection against oil, dust, grime and grease. It fits closely around the nick covering the collar and it is also close fitting at the wrists while trousers are provided with straps which button around the ankles. It is made of washable khaki cloth and is designed for all those who do work around automobiles, whether owners, chauffeurs or mechanics.

CRANE PULLER

Crane Puller Co., 54 Lake St., Arlington, Mass. PRICE, $8 to $13.

This is a wheel and gear puller made with either two or three arms and a variety of hooks and bars for engaging



Sealwell piston ring

different pieces. It may be used for pulling flywheels, gears, bending shafts and a special fitting is sold for $5.50 to $7.50, depending on the size, which enables the device to be used as an arbor press.

THOMPSON CARBURETER HEATER

Thompson Mfg. Co., Des Moines. PRICE, $4.50.

Easy starting in cold weather is facilitated by warming the gasoline in the carbureter electrically. An electric heating element is placed in the carbureter float chamber and the current is turned on by a button on the dash. The device may be installed on any carbureter, it is said.

CAMPO MOTOR RESTAURANT

Berg Auto Truck & Specialty Co., 400 Lafayette Street, New York. PRICE, $100.

This restaurant, as it is called, has capacity for seven people, is 23 x 8 x22½ high and weighs 60 lb. There are knives, forks, cups and spoons plated with nickel silver, non-spillable salt and pepper shakers, butter jar, four 1-qt. thermos bottles, folding table, four folding chairs, table cloth, napkins. It is provided with an enameled duck cover to protect it against dust and water. It may be carried in the tonneau or on the running board.

SHINE-BRITE

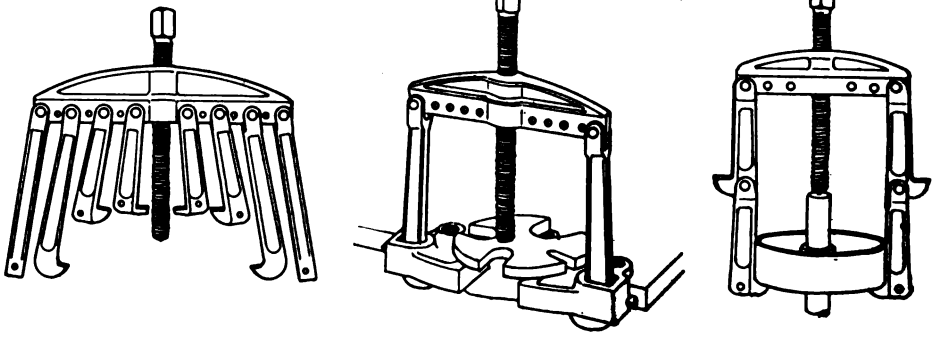
Shine-Brite Products Co., Indianapolis. PRICE, gal., $3; ½-gal., $1.75; qt., $1.

This body polish cleans and polishes and is designed to prolong the life of the surface. It is a liquid wax polish and contains no turpentine or acids, it is said.

SILVERBEAM SEARCHLIGHT

Williams Mfg. Co., 310 N. Flower St., Santa Ana, Cal. PRICE, $8 complete.

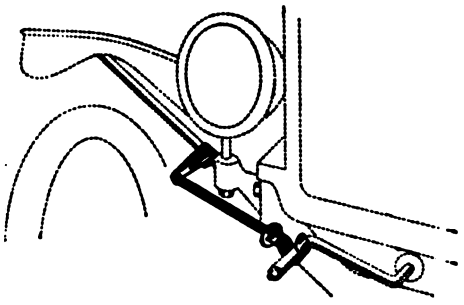
A powerful spotlight which is carried on a universal bracket and may be mounted on either side of the car. A feature is that it has a detachable trouble lamp with 5 ft. of cord.



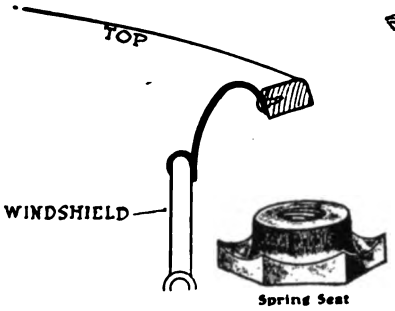
Crane puller—Left—Standard outfit complete. Center—Special attachment which makes it an arbor press. Right—Removing a flywheel

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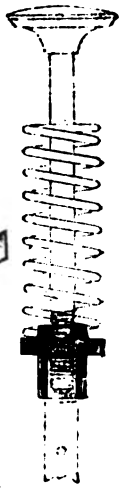




Left—Comfo-lux back rest which increases driving comfort. Above—The King crank holder prevents crank rattle







Above—Powers Anti-draft shield for Fords. Right—Home valve adjusters

COMFO-LUX BACK REST

Rudolph Claus, Ottawa, Ill., PRICE, $3.00.

As the name implies, it is a back rest for the driver and fits closely around the body. It is upholstered with Du Pont Fabrikoid.

KING CRANK HOLDER

King Specialty Mfg. Co., Brookline, Mass. PRICE, 35 cents.

The King crank holder is designed to stop the rattling of the starting crank and is particularly for Fords. It clamps around the fender support and holds the starting crank to one side.

POWERS ANTI-DRAFT SHIELD FOR FORDS

Powers Mfg. Co., Brighton Station, Cincinnati. PRICE, per dozen, $15.

Between the top and the windshield of every Ford car there is a gap and this shield is designed to close it. It is made of 32-oz. enameled rubber duck with strong spring clips which fasten to the windshield and with curtain fasteners and islets which attach to the top. It may be installed in 5 min. and removed or replaced in 30 sec. It is adjustable and fits any Ford car.

HOME VALVE ADJUSTERS

Home Light Co., 3353 Milwaukee Ave., Chicago. PRICE, per set of 8, 18-thread, $1; 24-thread, 50 cents.

This valve adjuster consists of a thimble nut which is threaded on to the end of the valve stem and above it another nut which not only acts as a lock for the thimble nut, but also forms the valve spring seat.

DIXIE ELECTRIC PRIMER

Utilities Sales Co., Spokane, Wash. PRICE, $5.

Easy starting in cold weather is obtained by the use of an electric plug which is screwed into the manifold and which may be heated by simply turning a switch on the dash.

TIE ROD SILENCERS

Gasco Mfg. Co., Lancaster, Pa. PRICE, 65 cents.

The rattling of the tie rod is prevented by attaching a stiff spring at each end which holds it firmly. No tools are required for attaching. It can be put in place in 5 sec., it is said.

PARABOLITE

Pittsburgh Electric Specialties Co., Pittsburgh.

This is a spotlight having a new design of parabolic deflector which gives a non-glare beam without the dark center, thus increasing the efficiency of the lamp. The reflector cap R keeps the direct light of the bulb from passing beyond the limits indicated by the letter CC and returns the light to the reflection surfaces A and B, all light falling on surface B being thrown directly out into parallel beam and all light on surface A being redirected to D and thence into the beam. Ordinarily this light is lost, it is said. This lamp has a 6-in. reflecting surface and is provided with a 21 c.p. nitrogen bulb and a Cutler-Hammer switch. It is made with brackets to fit all makes of cars and has a 4-in. rear view diminishing mirror at the side.

UNIVERSAL VALVE GRINDER

Siegel & Andrews, Amsterdam, N. Y. PRICE, $1.

This tool is shaped like a brace and has an adjustable head to fit the valves of any car. There is a ball and socket joint in the head so that it is not necessary to hold the tool exactly vertical. Furthermore, it is impossible to grind a valve other than true, it is said. It is made entirely of steel.

STANLEY GARAGE DOOR HINGE

Stanley Works, New Britain, Conn.

Very little time and labor are required in applying this hinge, which is a heavy T design with reverse half, because only the jam of the door requires mortising. The surface leaf is applied to the surface of the door. It is made in 10, 12, 14 and 16-in. sizes and finished in dead black japan.

STARRETT VISES

Athol Machine Co., Athol, Mass.

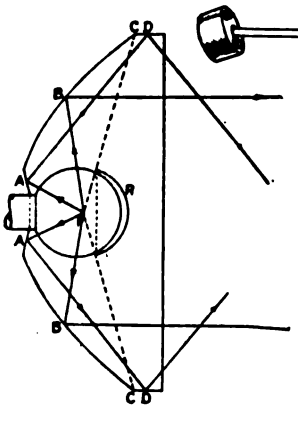
A variety of vises is manufactured, including one with a swiveled jaw which has the advantage that tapered pieces may be held. The taper swiveled jaw clamp is drawn to a bearing by a straight threaded end and is readily removable. Price, $1 to $2.40; jaw widths, 1⅝ to 3½ to 9 in. A double adjustable taper attachment is a simple device which accomplishes the same purpose and may be applied to any vise. It is quicker in action than a swivel jaw vise and holds pieces too short for the swivel jaw. It is designed particularly for short tapers. Price, $1. to $2.50; way widths, 1⅝ to 5 in.

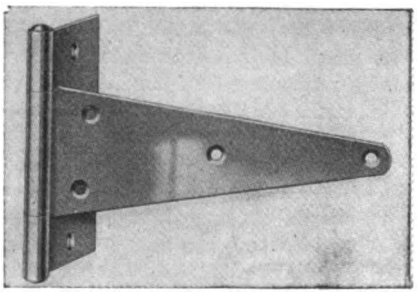
HEAVIER MASTER INSULATOR

Hartford Machine Screw Co., Hartford, Conn.

The calorite insulator of this plug has been increased in size in order to resist side blows such as a plug is apt to receive from a slipping wrench. Otherwise the plug is unchanged.

Universal valve grinding tool





Left—Parabolite—A new headlight reflector. Right—New Stanley hinge for garage doors

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(No. 1041) BENCH LAMP BRACKET

A simple bracket for the repairshop bench lamp is shown. It is made throughout of ½-in. pipe, consisting of an upright and a horizontal piece connected by a pipe elbow. The upright member is fastened to the wall by strap iron clamps, and the clamp may be swung to any position and held by means of a thumb screw in the lower clamp. The lamp cord is passed through a wooden block fastened to the end of the bracket and may be raised or lowered to any position.—W. L. Toffard, The Winton Co., Philadelphia.

(No. 1042) ADJUSTABLE PULLER

The adjustable puller shown possesses many valuable features. It is simple to construct, strong and easy to operate. The feature in the construction is the method of securing the pulling arms to the cross piece, the arms merely being drilled and squared to fit over the cross piece ends. Though a simpler construction would be to drill the holes in the pulling arms and use a round cross piece, this construction has not been found desirable, as the screw can then slip from the end of the shaft when the puller is in use.—W. L. Toffard, The Winton Co., Philadelphia.

(No. 1043) VALVE GRINDING FIXTURE

Pits and scores in the face of a valve may be removed by an emery wheel by the aid of a fixture illustrated. This fixture comprises a bushing drilled to be an exact fit for the valve stem and carrying a coiled steel spring that serves to hold the valve in the bushing. The entire assembly is held by hand on the face of the emery wheel, taking care that the valve face is ground at the same angle as formerly. Due to the action of the wheel the valve is rotated and new surfaces brought into contact and the valve ground down evenly.—Charles Hill, Graham-Hill Garage, Shaw, Miss.

(No. 1044) PORTABLE GRINDER

A small ⅛-hp. electric motor may be easily converted into a lathe or portable grinder. The motor used for this purpose should have a base that will permit attachment to the T-support in the manner illustrated, and this support should be forged so that the arm will fit into the tool post of the lathe. The grinding wheel found to be best for grinding this type is a 6-in. wheel ¼-in. thick.—W. L. Toffard, The Winton Co., Philadelphia.

When You Write!

DON'T forget the Short-Cuts department next time you write MOTOR WORLD. *Whatever the occasion is, whether you write for legal advice, for information on winter business methods, or to renew your subscription, don't forget to make a rough sketch and write a short description of your best Short Cut.*

(No. 1045) REPAIRSHOP DOOR LOCK

A method of preventing intruders from entering the repairshop is illustrated. The spring lock on the repairshop door is connected by a chain to a point convenient for the tool room boy. As each person desiring to enter the repairshop must pass a window of the tool room, any privileged person may be seen and permitted to enter.—King Service Station, New York.

(No. 1046) EXPANDING CYLINDER LAP

An expanding cylinder lap for the model 69 Overland may be made from a worn out piston from a model 79 Overland. The head of the piston is removed, the piston turned down to 4 3/32 in. diameter, and one wrist pin bearing drilled and tapped with a ⅛-in. pipe plug tap in the manner illustrated. The wide ring thus formed is then split down through the wrist pin bearing on the tap side, so that a plug screwed into the tap hole will cause it to expand. A handle is formed from an old connecting-rod having a ½-in. crosspiece bolted to its upper end, as shown. Ground glass and oil are used for a lapping compound.—Harry L. Olive, Overland-Pacific, Inc., Spokane, Wash.

(No. 1047) ARBOR PRESS FIXTURE

Flanges and gears may be readily removed in the arbor press by the aid of this fixture. A metal base carries two pivoted arms that are braced against the hub of the gear or flange to be removed, pressure being applied by the plunger of the press, forcing the arbor or shafts from the gear. The pins holding the pivoted arm to the base are made a loose fit, so that in use the pressure is transmitted directly from the arm to the base, removing the possibility of shearing the hinged pins.—W. L. Toffard, The Winton Co., Philadelphia.

(No. 1048) FORD VALVE TOOL

A handy tool for removing Ford valves may be made from a piece of steel ⅝ in. round and about 12 or 14 in. long. One end is flattened out for about 4 in. and then drilled ¼ in., and the flattened end is then notched in the manner shown to permit insertion beneath the valve locking washer. A piece of ¼ in. rod is then bent at both ends, one end passing through the ¼-in. hole in the lever and the other being used to hook over one of the manifold studs. By the aid of this lifter the valve may be removed with removing either manifold.—H. S. Williams, Wilmington Auto Co., Wilmington, Del.

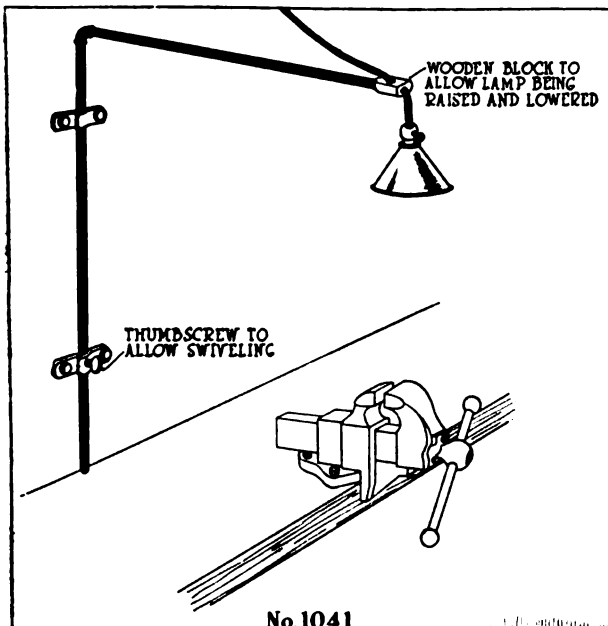
(No. 1049) TOWING BAR

A towing bar for service station use is illustrated. It is costructed throughout of parts that may be found in any repairshop, being chiefly composed of pipe fittings. The tow bar proper is 2-in. steel pipe, about 6 ft. long. One end is fitted with a universal coupling for attachment to the towing car, the other end with a spring plunger and similar coupling for attachment to the towed car. The spring plunger is housed in a casing made of 3-in. pipe in the manner shown, the rear end being sealed by a pipe cap bearing an eye for attachment to the towed car. A special clamp is fastened to the car to be towed.—W. L. Toffard, The Winton Co., Philadelphia.

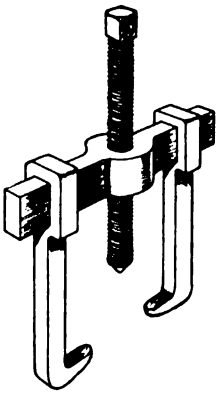
(No. 1050) REAR AXLE KINK

A rear axle repair for several Overland models. The threads in the rear axle housing carrying the differential thrust adjusting nuts occasionally become stripped. In such cases the holes may be tapped 1/64 in. oversize by the aid of a device illustrated. All parts of the differential are removed and an oversize cap screwed into the stripped threads as shown; the tap being carried on and turned by a squared shaft running through the axle.—Harry L. Olive, Overland-Pacific, Inc., Spokane, Wash.

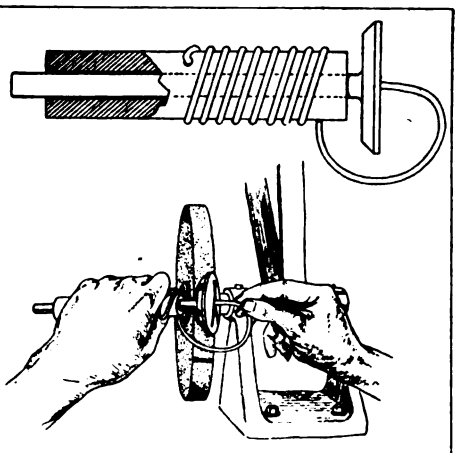
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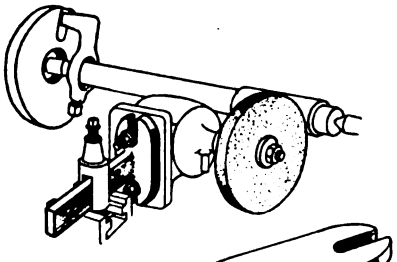
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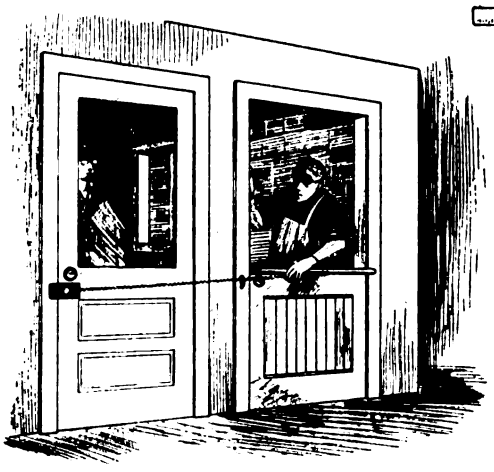
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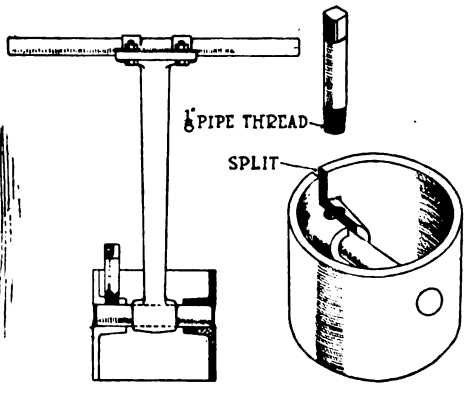
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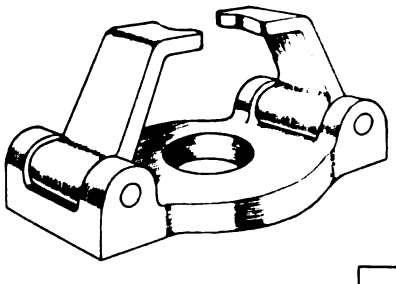
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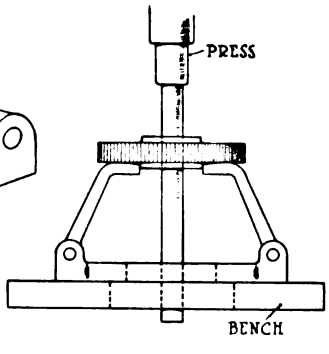
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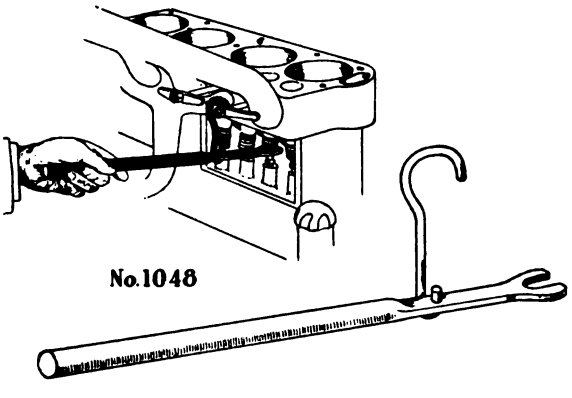


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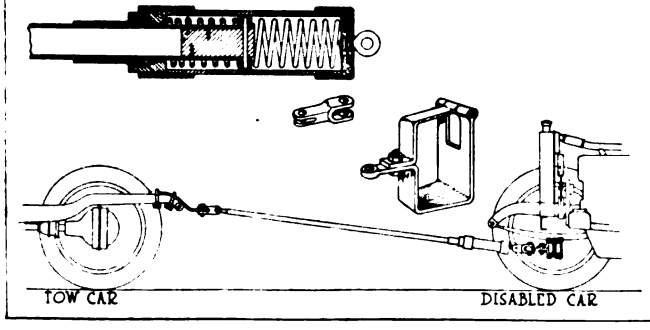


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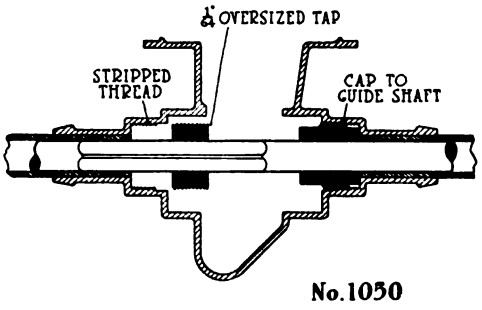




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Editorial Observation

The Winter Burden

GETTING cars when they are wanted and not getting them when they are not wanted has for several years been one of the big problems of the dealer. It is so today.

When the buyers beseige the dealer in the summer and the dealer cannot get cars, the dealer loses money, and when the factory beseiges the dealer in the winter and buyers tend to hibernate, the dealer again loses money.

It is heads I win, tails you lose.

A canvass of the Chicago show last week revealed potent facts as to why some remedy should be found for this condition. It is not the fault of the dealer that he cannot sell all the cars that the factory would like to have him take during the winter. He can sell some, and some dealers do have excellent winter sales, but as things stand today production and distribution do not at all hitch together on an equitable basis.

There were distributers at the Chicago show who lost money last August and September—a prime selling season—because the cars that the factory had contracted to give them did not materialize. Why they failed to come is another story. The point is that they failed to come, although the factory had set it down in black and white in its contract with the distributer.

And now the factory is pushing cars at these distributers, who had to turn down actual profits last summer because they couldn't deliver the goods. The distributers realize that not to lose money this spring they must have cars and their dealers must have cars, so they are storing them. The dealers are taking a few, but not their share of the burden.

And where the distributer had to pay $2 a month for storage a year ago he is now paying $2.50. This means $10 for four months, which cuts an ugly hole in his profits. Also, the storage adds more to the cost of doing business than the mere cost of floor space.

This loss of money last summer and storage cost in the winter is a burden upon the distributer. How can it be relieved?

The distributer is willing to do his share, and right now is doing more, but he wants a more even break. It is suggested that when a factory fails to deliver August's cars until December it deduct, say, $25 from the price to defray the loss to the distributer through lost profit and winter expense. This would help some, but, at that, would not begin to compensate for the money the distributer might have made had he secured cars when they were scheduled for delivery.

Furthermore, it is not a question of friction, although it offers possibilities, but there is a great, big opportunity for a display of that co-operation which has helped make the industry what it is.

There should be a talk-it-over and a determination of policy.

Not More But Better Dealers

WITH many manufacturers of cars the rush for more dealers has ceased to a considerable degree. *What they want now is better dealers.*

Conversation with factory men at the Chicago show brought forth many times the statement: "We want better dealers in a few places. We don't need any more. We have enough to take care of our output."

This means but one thing—that dealers are going to be better. It lays open an opportunity for the dealer and puts great emphasis upon it. It means that the dealer who is not a good dealer is on the down grade and is destined for elimination. The industry is working toward better dealers and WILL HAVE them.

Wherefore, the dealer visitor to the Chicago show may take away one big thought at least. If he looks around him and sees dealers better than himself, he should endeavor to make himself a better dealer. He should give his factory meritorious representation. The factory is entitled to it and the dealer owes it to himself as a business man.

Better dealers make more money.

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WHAT IS A DEALER?

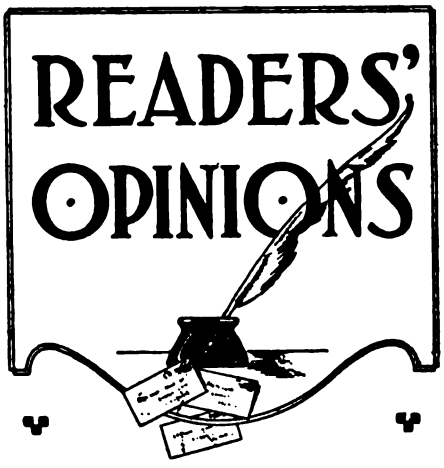
Editor Motor World: In pursuance of recent discussions appearing in your publication respecting the definition for a "Legitimate Automobile Dealer," I have pleasure in submitting the following from the records of the National Automobile Trade Association:

1. A LEGITIMATE AUTOMOBILE DEALER is one who has properly executed the formal contract offered by the manufacturer or distributer with whom he has an account, and has fully complied with the terms thereof respecting deposits, formal orders, warrantees, etc.; he shall provide proper headquarters for the sale and exhibition of the product supplied by the manufacturer or distributer covered by the aforesaid contract; he shall provide proper facilities for pursuing the interests of his patrons with respect to the care and operation of the cars sold by him, in accord with a reasonable local service warranty and in full accord with the warranty of the manufacturer.

2. A CLASS A PUBLIC GARAGE shall first be insurable property under the rules of the State Insurance Inspection Department; there shall be an adequate cost accounting or bookkeeping system to guarantee the proper and business-like conduct of the enterprise; the character of employees shall be such as to guarantee proper care of patrons property as well as accurate mechanical service and advice, and the arrangement of stock and equipment shall be maintained in a cleanly and orderly manner.

3. A LEGITIMATE RETAIL SUPPLY DEALER is one who sells automobile merchandise in the form received from the jobber or manufacturer, by "o v e r-t h e-counter" methods, chiefly to the ultimate consumer; who purchases and maintains a stock sufficient and suitable to the requirements of his market; who provides proper facilities for dealing direct and personally with most of his customers, and who maintains salesroom equipment for the satisfactory exhibition and demonstration of the merchandise for sale.

The above definitions represent the ideals of the National Automobile Trade Association toward which we are pointing our membership. In so far as we can determine, there is no requirement that is incompatible with proper business procedure or organization. Unless the dealer or garage operator shows a disposition to meet these requirements there is little hope for permanency or profit in his enterprise.



These definitions have had the consideration and approval of the several State associations under the supervision of the National Association office.

As the representative of the retail interests we shall be glad to have suggestions or criticisms from the manufacturing and jobbing interests.—J. C. Thorpe, general director, National Automobile Trade Association, Chicago.

The Ticket Situation

Editor Motor World: We note with interest comment in this week's issue of the Motor World complaint made by dealers of shortage of admission tickets to the recent automobile show at New York.

We hardly believe the dealer has much complaint in this matter, for they were much better taken care of than the jobber. The jobber was presented with no tickets whatever and goes to the show to purchase merchandise. The dealer's mission is to lay in wait for any local prospective customers and sell automobiles, so to them it is a matter of getting business while with the jobber it is a matter of giving business, and we believe some arrangements should be made whereby the jobber will be used equally as well as the dealer.—United States Rubber Co., H. J. Thomas, Syracuse.

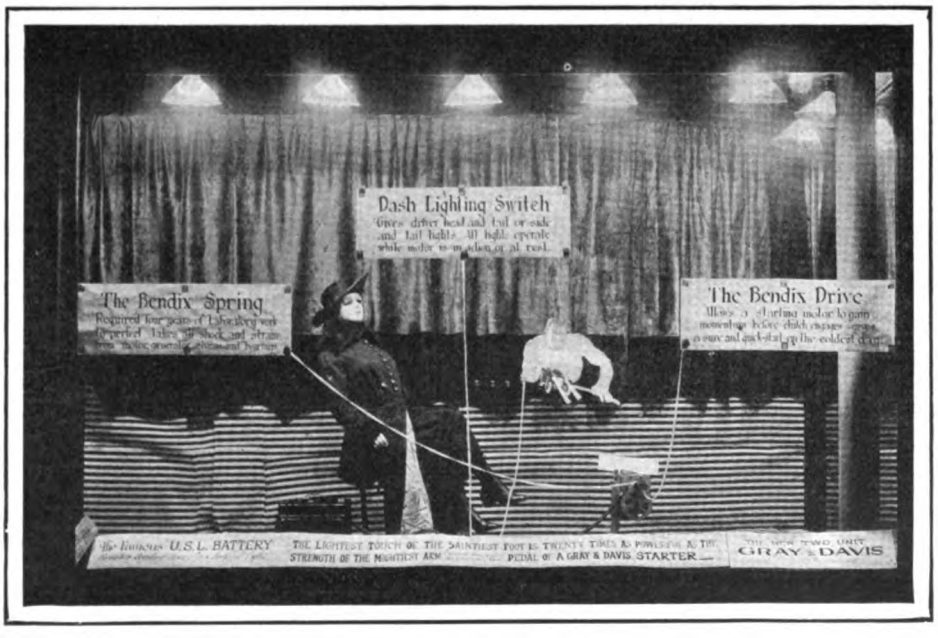
Unusual Service for Truck Users

NEW YORK, Feb. 3—An unusual step has been taken by the Autocar Co., Ardmore, Pa., to give the owners of its trucks quick and efficient service. This company is offering an Autocar service kit. This consists of a trunk-like box in which are furnished a selected list of spare parts determined by a consideration of the number of trucks the owner may have, and whether he is located one mile or many miles away from the nearest branch, service station or agency. A charge will be made for the service and at a slight additional investment unused parts may be returned so that an owner may keep on hand the parts which he has found need replacing from time to time.

Inland Establishes Branches

ST. LOUIS, MO., Feb. 3—The Inland Machine Co. has established the following branches: Washington, D. C., in charge of T. F. Mattingly; Cincinnati, J. M. Henry; Pittsburgh, C. A. Donnelly; Atlanta, L. L. Magruder. W. S. Gardner will cover the Northwestern territory, and G. B. Barken, recently city salesman, will go to Cleveland to open that territory, while G. W. Brokaw will become city salesman.

Here's an Unusual Window Dressing Idea



This is intended to convey the idea that the lightest touch of milady's toe is sufficient to operate the Gray & Davis starter because of the Bendix gear. Note the clever use of placards and ribbons leading to them. Justus & Parker, Columbus, Ohio, built the window.

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The RETAIL NEWS.

MIDDLE WEST

Charles McMullen, Sturgeon Bay, Wis., has opened a garage and repairshop in the Washburn Building, in that city.

The Harris Auto Co., Prairie du Chien, Wis., has made an installation of oxy-acetylene welding and cutting apparatus.

O. R. Williams, Tigerton, Wis., is doubling the size of his garage and repairshop and will install additional equipment.

The New London (Wis.) Motor Car Co. has taken possession of its new garage, sales and service building.

A. C. Hansen, Delavan, Wis., has opened an accessory and supply store in the Tinney Building.

Harry Beckwith, Platteville, Wis., is remodeling his livery stable into a modern garage and repairshop.

The Milltown Auto Co., Milltown, Wis., has installed an 8-ft. South Bend lathe and other mechanical equipment.

Goetsch Bros., Franklin, Sheboygan county, Wis., Dodge dealers, are completing work on a new garage and repairshop.

Moar Bros., Boscobel, Wis., have installed a complete machine shop equipment in their garage and salesroom building.

A. Jennings, New London, Wis., has disposed of his repairshop and repair business to Lawrence and Charles Thoreson, the former having been manager. Mr. Jennings will erect a large addition to his garage in the spring.

Kuester Bros., West Bend, Wis., have installed an oxy-acetylene machine and an Ambro electric testing unit in their garage and repairshop.

The Tomah Iron Works & Garage, Tomah, Wis., have established a completely equipped storage battery and electric vehicle service department.

The Whitewater Garage Co., Whitewater, Wis., has been incorporated with a capital stock of $6,000 by A. A. Dietzel, E. Drewry and K. C. Strachan, to do a general sales and garage business.

Frank Larson, Sturgeon Bay, Wis., has moved his vulcanizing shop and tire store into the building formerly occupied by the Peninsula Auto Co.

Hessel Bros., Ellisville, near Kewaunee, Wis., Pullman dealers, are building a new garage, 50 x 50.

The W. H. Stewart & Son Garage, Delavan, Wis., was gutted by fire on Jan. 16. The loss is estimated at $10,000.

Zahn Bros., Potter, Manitowoc county, Wis., have sold their motor car and farm implement business to Otto W. Thiel for $13,250.

Fred Zitzner, West Prairie, near Viroqua, Wis., has sold his motor car and implement business to Fred P. Bean, DeSoto, Wis.

The Quincy Garage & Supply Co., Hancock, Mich, has changed its name to the Fallon Garage Co. upon moving into its new garage, 60 x 115, erected at a cost of $15,000. The repairshop is 30 x 60, storage 35 x 60 and the show room 35 x 50. The firm is dealer in Ford, Buick and Packard cars and the Stegeman truck. L. M. Fallon is manager.

The E. H. Rummele Auto Co., Sheboygan, Wis., operating one of the largest garages in that city, has found it necessary to provied additional storage room for car and parts stocks. Consequently, arrangements have been made to erect a two-story warehouse, 40 x 150, on a detached site on Center Ave.

Louis Biron, Rice Lake, Wis., has purchased the New Auburn Garage at New Auburn, Wis.

E. F. Krueger, Glenwood City, Wis., contemplates the erection of an addition to his garage.

The Al. Friedrich Livery, Watertown, Wis., on May 1 will become the Friedrich Garage & Livery Co. The building is being remodeled into a garage, repairshop and livery. The mechanical department will be in charge of Claude Reynard. The motor livery will consist of Mitchell cars and a hearse built on a Mitchell chassis.

The Oconto Falls Motor Car Co., Oconto Falls, Wis., has been purchased by W. J. Munsert and D. J. Meyer. J. A. Delbridge retires. Munsert has sold his garage at Oconto, Wis., to R. D. Clarke. The Falls company is Oconto county dealer in Ford and Buick cars.

Chester Humbert, Caldwell, near Mukwonago, Wis., has sold a half interest in his garage to his brother, Reuben, and the firm will henceforth be known as Humbert Bros.

Cunningham Bros., Burlington, Wis., have moved into the garage at Dodge and Chestnut Streets, purchased from the Agner Automobile Co., which has just completed a new garage. Cunningham Bros. are Buick and Overland dealers.

The S. & S. Motor Car Co., Green Bay, Wis., will take possession of its new garage on Feb. 1. It is 88 x 106, fireproof, accomdating sixty gasoline cars and twenty electrics. The company is distributer of the Paige cars in upper Wisconsin and northern Michigan, and Brown county dealer in Oakland and Detroit electrics.

Byrne Bros., 3112 Burleigh Street, Milwaukee, are building a public garage and service building costing $8,000 at Twenty-sixth Street and Fond du Lac Ave., Milwaukee. It will be 45 x 118, one story and basement.

The E. W. Clark Motor Co., Fond du Lac, Wis., has been appointed official service station for the Prest-O-Lite Co., Indianapolis, and created a new department, with complete equipment, to be in charge of Joseph Hoffmann.

M. D. Savage, La Crosse, Wis., has been appointed distributer of Smith Form-A Trucks in La Crosse and eight adjoining counties.

The Wisconsin Auto Supply Co., Wausau, Wis., has been reorganized, with L. M. Willard as president and Fred Sexsmith as secretary and manager. It operates an exclusive garage and service business at 131 Clinton Street and does not deal in cars.

The M. & M. Automobile Co., Eau Claire, Wis., has taken possession of its new garage at South Barstow and Gray Streets. A. J. Francis has assumed charge as manager. The company is Maxwell, Mitchell and Oakland dealer. The style is to be changed to Kinney Automobile Co. as soon as practicable.

N. M. Howe, Shawano, Wis., will take possession of his new garage on Feb. 1.

Andrew J. Bautz, 982 Lincoln Ave., Milwaukee, will build a brick and steel garage, 60 x 130, one story and basement, on Layton Boulevard, near Greenfield Ave.

The Peninsula Automobile Co., Sturgeon Bay, Wis., has changed its corporate style to The Peninsula Co. and will broaden its scope to include a complete machine shop business and the sale of farm implements and machinery. The company is Studebaker and Chevrolet dealer.

The Agner Automobile Co., Burlington, Wis., has moved into its new garage, erected at a cost of $10,000. The capacity for storage is sixty cars. The repairshop is located in the basement.

The Chevrolet Motor Co., Milwaukee, has appointed W. M. Wright as its northwest side dealer at Milwaukee. Headquarters will be at 964 Teutonia Ave.

The Olympian Motor Sales Co., Milwaukee, has been organized, with Dr. J. F. Schreiber as general manager, to distribute the National and Olympian in this territory. Dr. Schreiber, who is one of the earliest motor car dealers in the Northwest, recently withdrew from the Schreiber-Boorse Motor Car Co., Milwaukee, distributer of the National and Chandler. The last-named car is now being distributed by the Achen Motor Car Co., Milwaukee, of which H. C. Boorse is a large stockholder.

The Harper Garage Co., Chicago, Ill., was incorporated this week, with capital stock of $5,000, to do a general garage, supply and repairs business. Incorporators: J. L. Harper, L. F. Anderson and H. L. Wegel.

David Kuntz, Roanoke, Ill., is erecting a garage of two stories and fireproof contruction. A sales agency will be maintained and a general repair, storage and supply business operated. The plant will be ready for occupancy by April 1.

Fox Bros., Watseka, Ill., opened a new and modern garage this week, 75 x 150. Repair business will be a specialty, while a complete line of supplies and accessories will be carried.

V. D. Roughton and **James Harsh**, Sullivan, Ill., have purchased the blacksmith shop of S. F. Hoke and will remodel it into a garage, in connection with an adjoining structure also secured. The new firm will establish a sales agency and will operate a repair and supply department. When completed, the plant will be one of the largest in Sullivan.

J. M. Johnson, Orion, Ill., has purchased a lot and will at once erect a brick garage of two stories, 50 x 90. A sales agency will be maintained and a general supply and repair business conducted. The plant will be ready for business by April 1.

Ed. Finels, Ionia, Mich., in partnership with Rev. E. E. Branch, will handle the Studebaker. A new garage will be built.

The Lapeer Tire & Rubber Co., Lapeer, Mich., has opened a store.

Pinkham & Wright, Jonesville, Mich., Ford dealers, have taken over the Jonesville Garage, formerly operated by George Rock. Ford parts and accessories will be carried.

Clarkson-Blanding, Lansing, Mich., new Ford distributers, have opened temporary sales and service stations at 319 South Capitol Avenue. Their permanent location, 300-306 East Michigan Avenue, will be opened May 1.

J. D. Wright, Urbana, Ohio, Champaign County agent for the Reo, has leased the Dimond Building on South Main Street, and will locate his show and salesrooms there.

R. M. Morris, Gladwin, Mich., will erect a garage, 44 x 100, at the corner of Cedar Avenue and Arcade Street.

The Mohawk Rubber Co. of New York, Inc., with factory at Akron, Ohio, has opened a branch at 86 Brookline Avenue, Boston, with the object of providing better service for the New England trade. Norman W. Biggart of New York will be manager of the new Boston office.

The Holmes Bros. Garage on North Hazel Street, Danville, Ill., has moved into a new addition, found necessary by expanding business.

Guy Coleman, Canton, Ill., has opened a new garage on North Main Street, and will carry a line of supplies and accessories and handle a repair and storage business.

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Wheeler & Sorrells, Jacksonville, Ill., have purchased the garage of William Newman and removed the stock, machinery, etc., to the garage of the former on West Court Street.

F. G. Praetz, Creston, Ill., has opened a garage, to be known as the "Lincoln Highway Garage." The plant is fireproof and a complete line of supplies will be carried and a repair business conducted.

A. A. Cox and C. M. Morton, Galesburg, Ill., have purchased the garage of W. P. Martin on North Cherry Street. Martin is the senior garage man in Galesburg, commencing business in 1900. It is planned to expand the business and make a number of improvements. Cox was formerly the owner of a garage in Alton, Ill.

H. J. White & Sons, Havana, Ill., have completed a new garage on Main Street, finding the old quarters on Market Street too small for growing business. The firm, prior to a year ago, operated a garage in Forest City, Ill.

The Harsman Garage, Havana, Ill., has rented the building on Market Street, formerly occupied by the H. J. White & Sons Garage, and will utilize it as a storage room. The main plant of the Harsman firm was inadequate to take care of the storage business offered.

J. O. Ward, Maroa, Ill., has purchased a large horse sale barn in that city, and is remodeling it for a garage. He will handle a line of supplies and do a general repair business. A sales agency will also be conducted.

W. H. Cameron, Milwaukee, has awarded contracts for the erection of a two-story building, 60 x 120, at 530-532 Milwaukee Street, to be occupied by the Northwestern Storage Battery Co., 140 Mason Street, which has just been appointed distributer and service station for the Willard battery.

The Wolf River Garage Co., Shawano, Wis., has been organized by Nate M. Howe, Albert Engel and Roy Ziebuhr to operate the new garage and repairshop building erected by Mr. Howe at that point. The company will be Reo dealer.

John C. Lyon and William E. Gehrke, New London, Wis., Oakland and Chevrolet dealers, have leased the Dedolph Building and are fitting it up for a garage and service station.

The Saxon Garage, Evansville, Wis., is the name of the new garage and repairshop erected at that point by Harry Loomis and W. J. Rowley, Saxon dealers.

The Highland Motor Car Co., Dodgeville, Wis., is preparing to build a new garage and repairshop. P. W. Hennessey is president.

The Marathon Motor Co., Wausau, Wis., has taken possession of its new garage and repairshop at Edison Street and Fourth Avenue. The building is 65 x 120, part two stories.

W. M. Anderson, Superior, Wis., has purchased the garage and repairshop at 1920 Winter Street, and is installing new tool equipment.

The Auto Sales Co., Milwaukee, is having plans prepared by Edward A. Juul, architect, Sheboygan, Wis., for a three-story garage, 60 x 120, of fireproof construction. The location will be announced later.

C. F. Kimball, Racine, Wis., formerly occupying part of the Evans Garage, has opened a new garage and repairshop at 611-613 Seventh Street in that city.

The Teutonia Avenue Motor Car Co., Milwaukee, has been organized with a capital stock of $3,000 by Hugo Wolter, A. C. Niezel and Aton Bertram to retail new and used cars and operate a garage.

The Jennings Garage, New London, Wis., has disposed of its repair business to Thorson Bros., who will continue to occupy the present quarters and provide service to Thorson customers.

The Onalaska-Overland Co., Onalaska, Wis., has been organized by Byron Moore and others to distribute and retail Overlands. A new garage and service shop is being established in the former livery stables of A. N. Moore.

J. A. Stevens, Racine, Wis., owner of the Service Garage, 1607-1609 Racine Street, has sold a half interest to Jack Evans and the firm now is known as Stevens & Evans.

P. W. Rindfleisch, Plainfield, Wis., is remodeling the Hoaglin Building into a modern garage and repairshop.

Colombe Bros., Houghton, Mich., have opened a garage, service station and salesroom in the building at Shelden and Franklin Streets, and will deal in Lexington cars.

Fred Seehafer, Marshfield, Wis., farm implement dealer, is preparing to erect a public garage and repairshop building in the spring and will take on several motor car agencies.

W. C. Dallmeyer, Stoughton, Wis., is establishing a new garage and repairshop.

Gundlach & Hackbert, Arlington, near Morrisonville, Wis., are remodeling the Kleinert shop building into a modern garage and repairshop.

E. S. Merris, of Macon, Ill., and Roy Bartman, Danville, Ill., will open a garage at 208 North Franklin Street, Decatur, Ill. They will be distributers for Auburn cars and Republic trucks, and will also carry a line of supplies.

Thomas Hamlin, Port Huron, Mich., has rented part of the Mihlethaler building for a showroom.

Henry Graff, Fremont, Mich., has opened a vulcanizing and repairshop on Main Street.

Nat Schermerhorn, Howe, Mich., Ford dealer, has purchased the Abbott block building and will remodel it for use as a garage.

NORTH WEST

J. W. Tannehill has sold out his garage and accessory business in Norfolk, Neb., and bought out the Norfolk Tire Repair Co., which hereafter will be run under his name.

EAST

S. A. Miner, 305 Asylum Street, Hartford, Conn., Pierce-Arrow representative for northern Connecticut, has taken over the commodious salesroom at No. 294 Pearl Street, recently vacated by the Hartford branch of the Packard Motor Car Co. of New York. The Miner service station, one of the best in the East, recently completed, is located at No. 7 Spruce Street.

Tht Hartford, Conn., branch of the Willys-Overland, Inc., with temporary salesroom at 33-35 Allyn Street, has taken over the salesroom formerly occupied by its predecessor, the Overland-Hartford Co., at the corner of Allyn and High Streets, and will occupy it as a used-car department. Work on the four-story sales and service building at the corner of Asylum and Hurlburt Streets is progressing. It is expected the building, one of the largest in the East, will be ready for occupancy early in the spring.

The Elliott-Chipman Co., distributors for Hurlburt motor trucks, has opened a salesroom at No. 244 Pearl Street.

Kilby & Hamilton, Hartford, Conn., distrbuter for Halliday cars, have removed from 37 Mulberry Street to 244 Pearl Street.

The Charter Oak Motor Car Co., Hartford, Conn., has removed from 244 Pearl Street to 103 Albany Avenue.

The Stewart Products Service Station, 8 Wells Street, Hartford, Conn., has taken over the lower floor of the building at 14 Wells Street for a service department.

The Whaley Motor Co., Hartford, Conn., succeeds the Knox Whaley Co., and has opened a sales and service building at 449 Wethersfield Avenue. James H. Whaley is the head of the new concern. George D. Knox of the old company retains the Peerless line at 344 Pearl Street.

The P. J. Durham Co., 244-250 West Forty-ninth Street, New York, has opened a Brooklyn branch at 761 Park Place, formerly occupied as a temporary service station by the Willys-Overland Co. A. C. Phillips, formerly with the C. T. Silver Motor Co., will be manager of the branch, and he has also been made treasurer of the P. J. Durham Co.

The Larabee-Deye Truck Co., of Binghampton, N. Y., will soon have an agency in Kansas City, under the management of B. F. Hanna. The location has not been announced. It is said that an assembling plant will be located in Kansas City also.

SOUTH

Albert E. Hoffman, Nashville, Tenn., has been made assistant manager of the B. F. Goodrich Co. branch, having been transferred there from the factory. He began his tire work in Nashville and was called from there to the factory.

The Jeffery Sales Co., New Orleans, La., has been appointed to sell Stearns-Knight cars in Louisiana and the Gulf Coast counties of Mississippi.

T. M. Boissat, Jr., New Orleans, La., has been made salesmanager for the Demack Motor Car Co., Overland and Willys-Knight car distributer.

W. C. McRea, with F. P. Townsend, has opened an agency for the United Steel Supply Co. at 2022 Avenue B, Birmingham, Ala., where they will sell Ford starters.

SOUTH WEST

The Newell Motor Car Co., St. Louis, has moved into a specially constructed building on Locust Street, west of Jefferson.

The Westcott Motor Sales Co., St. Louis, will open salesrooms and service station at 3003 Locust Street. The former salesroom at 3334 South Grand Avenue will be retained as a South Side branch.

Rex Motor Co., St. Louis, has opened a shop at Grand and St. Louis Avenues, to rebuild Ford motors, magnetoes and transmissions. L. C. Morgan and L. J. Wofle are the firm.

The Velie Automobile Co., St. Louis, has opened a separate used car department at 1818 Pine Street, a one-story building, capable of displaying 50 cars. S. M. Smith is in charge.

The Scudder Motor Truck Co., St. Louis, distributer of the Service truck, has moved into new quarters at 2815 Locust Street.

The International Truck Sales Co., selling agents for the I. H. C. truck, Kansas City, has moved from the West Bottoms implement district to Motor Row.

The Topeka Buick Co., Topeka, has bought property and will build to secure 100 per cent more floor space.

The Buxton-Phillips Motors Co., Kansas City, has incorporated, $10,000 paid, and opened Chalmers agency at Twenty-sixth and Walnut Streets. Incorporators are H. G. Kirkland, Kirkland-Daley Motor Co., sales agency of Studebaker; F. D. Phillips, formerly wholesale sales manager of the Willys-Overland, Kansas City, and L. A. Buxton, formerly salesman, Kirkland-Daley Motor Co.

The Bates Steel Mule Tractor Co.'s agency at Kansas City, has moved to 1708 Grand Avenue. C. H. Bently is salesmanager.

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The Dougherty Motor Co., Kansas City, will have the Allis-Chalmers tractor at its headquarters, following an arrangement with A. L. Palmer, who has had charge of Allis-Chalmers tractors in this territory.

The Batry Vim Sales & Mfg. Co., Kansas City, has established headquarters at 210 East Fourteenth Street. Delbert Smith is president; Henry Greentree, vice-president and secretary.

The Henry Motor Service Co., St. Louis, has been incorporated, capital $6,000, half paid, by E. F. Powers, W. L. Wiley and L. S. Henry.

The Missouri Automobile Co., Kansas City, has been incorporated, capital $2,000 paid, by officers of the Missouri Auto Livery Co., 704 Linwood Boulevard. C. B. West, president; M. West, vice-president; H. G. Leidy, secretary. The company may enter the accesory business.

The Reichel Motor Co., Macon, Mo., has been incorporated capital stock, $40,000, paid; these stockholders: Theodore Reichel, John W. Hatton, D. W. Acuff, all of Macon.

The Metropolitan Auto Service Co., St. Louis, has been incorporated for auto livery and rental, with these incorporators: H. Kehlenbrink, E. H. Stephens, G. D. Duntze, P. P. O'Neil. Capital, $2,000, paid.

The Jackson Motor Co., Kansas City, will remodel its building soon.

The Williams Motor Co., Dodge City, Kan., Mitchell dealer, is planning a new garage.

Tom Burchard, Waynesville, Mo., will open a garage March 1.

Charles Cruse, Abilene, Kan.; is building a garage.

Ted Brown, Burlingame, Kan., is erecting a garage.

Odom & Zumwalt, Downs, Kan., have opened a garage and repair shop.

L. A. Poundstone has succeeded C. B. McLaughlin as manager of the Maxwell branch at Kansas City. Poundstone was formerly at the factory.

The Hutchinson Motor Car Co., Hutchinson, Kan., is moving into its new garage.

George Zechser, Salina, Kan., has moved his battery repairshop from Herington.

Lowe Bros., Hutchinson, Kan., Chevrolet dealer, have opened a service station.

Ira Lumbar, Abilene, Kan., has bought Ike Clewell's blacksmith shop, and will erect a garage in connection.

Williams & Cramer, Sixth and High Streets, Baldwin, Kan., will erect a garage in the spring.

"Van's Garage," Blue Rapids, Kan., will receive extensive additions soon.

Harry Petit, Chapman, Kan., will soon erect a garage.

Dowling Bros., Chapman, Kan., dealers in Buick and Saxon, will improve as a garage, quarters recently leased.

Will Darroch, Coldwater, Kan., Chevrolet dealer, has leased the Barlow building. He will add a repairshop.

F. D. Peatling, Concordia, Kan., will soon open a garage and vulcanizing station. He was formerly at Chapman.

Surrite Bros., Dwight, Kan., succeed John Jacobs in the latter's garage and repairshop.

L. H. Snyder, Grove City, Kan., will soon erect a garage. He comes recently from Yuma, Col.

The King Motors Corp., Hutchinson, Kan., will remodel the Martin building and occupy it, after vacation by the Hutchinson Motor Car Co.

The King Motors Corp., Hutchinson, Kan., is planning a branch in Wichita.

Fred Lanahan, Larned, Kan., has leased the Frizzell garage and is improving it for his sales headquarters for Fords.

Nelson & Newlin, Marion, Kan., have established the Auto Tire Service; Nelson will take an active part after Washburn College term closes in the spring.

The Willard Garage, Morrill, Kan., is under way, to have showroom, storage room and repairshop.

B. M. Grant, Ottawa, Kan., has bought the William Gilliland Garage, Mr. Gilliland remaining temporarily in charge. Grant is formerly of Springfield, Mo.

H. A. Frier, Russell, Kan., has bought property on which he may erect a garage.

The Hudson Sales Co., Wichita, Kan., has made arrangements for another story on its building.

Johnson Bros., Wichita, Kan., owners of the Auto Supply & Tire Co., are building a service and charging station.

The Woodbine Service Garage, Woodbine, Kan., is in operation.

The Dafforn Motor Co., Zenda, Kan., is building, and will open soon.

Charles and Ralph Wilder, Altamont, Mo., will open a garage, handling supplies.

Dick Davis, Mineola, Mo., plans to open a garage.

Casteele & Aesdale, Mound City, Mo., are operating a garage.

Clanton & Needham, Neosho, Mo., have opened the Safety First Tire & Vulcanizing Co., carrying accessories.

Hugh Adkins and Fred Cline, Granby, Mo., have opened a garage.

J. R. Williams, Lanagan, Mo., is erecting a garage.

Bishop & Talmadge, Wellsville, Mo., will soon replace their blacksmith shop with a garage.

The O. H. Bond Motor Co., Oswego, Kan., will occupy a new building, to be completed in about two months.

C. A. Hempler, Phillipsburg, Kan., has fitted up a vulcanizing room.

"Cap" Miller, Sabetha, Kan., is improving the Fletchall garage and will add a stock of implements.

J. R. Carlyle Ottofy, St. Louis, has opened a repairshop at 5827 Clemens Avenue.

The Singer Auto Traffic Signal Co., St. Louis, has opened salesrooms at 2827 Locust Street. C. A. Singer, the inventor of the device, is in charge.

Louis A. Scheibell, Kansas City, has been placed in charge of the service department of the King Motors Corpn., St. Louis. He is a former factory man.

Henry Hotze & Sons, St. Louis, distributers of the Pilot cars, have moved to 2809 Locust Street. George Fry is sales manager.

W. G. Fink, St. Louis, recently district man for the Overland Automobile Co., has joined the Briscoe Motor Sales Co., St. Louis.

The Midway Auto Co., Little Rock, Ark., has the agency for Davis cars and has opened a salesroom at 412-414 Louisiana Street.

The Oliar-Overland Co., Little Rock, Ark., has leased an adjoining building for the Overland and Willys-Knight salesrooms.

C. M. Manker, Salina, Kan., will open a garage.

C. L. Miller, Smith Center,, Kan., has bought the Maxwell agency and will add a repairshop.

COAST

Automobile Tire Co., Spokane, has been purchased by W. S. Melcher and will be combined with Retread Shop. Combined companies will be located at 1107 First Avenue, and distribute line of Diamond tires.

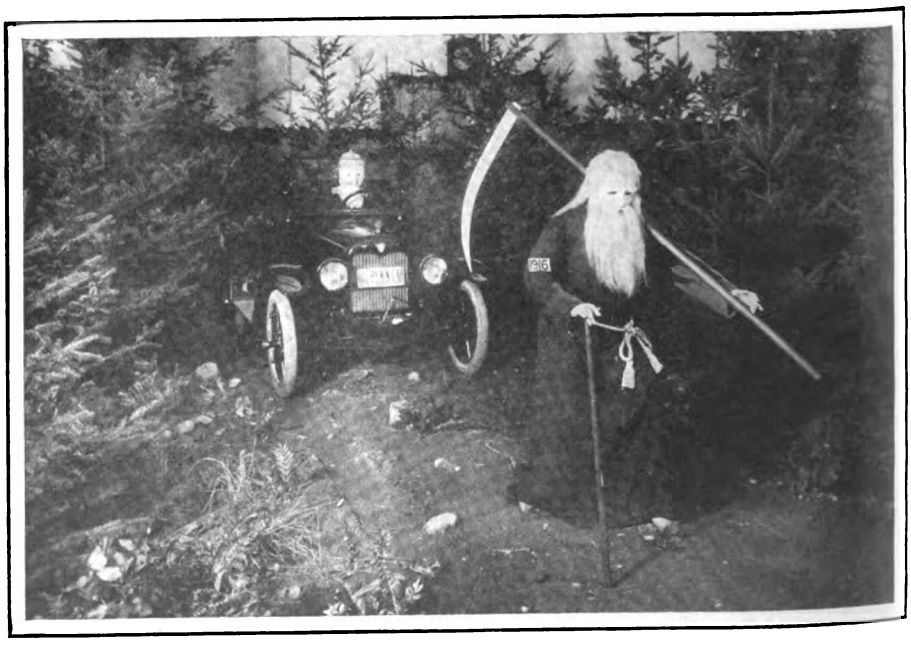
Traders' Motor Supply Co., Spokane, has opened a new salesroom and service station for Ford cars only at 1212-14 First Avenue.

D. B. Runner, Seattle, now heads the new company recently organized to distribute the Cole line. The change is made necessary on account of the departure of the former distributers, W. D. Sharp and E. E. Leader, who have accepted service in the British army.

J. B. Baldy, Tacoma, Wash., has opened a repairshop and vulcanizing plant at South Eleventh and Yakima Avenue.

Joseph A. Masterson & Co., handling F. & S. and Norman bearings, has moved into new headquarters at 1213 St. Hope Street, Los Angeles.

Here's How 1917 Arrived in Seattle



THE SEATTLE AUTOMOBILE CO., Seattle, staged this window at New Year's time. Old Father Time—1916—ambled down a wooden lane ahead of a Maxwell, on the radiator of which was a "Happy New Year" card, on which rode young 1917. *The display was designed by Manager H. P. Grant.*

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Do It This Way — QUERIES ANSWERED

Simple Tests to Determine Oil Quality

Editor Motor World: We are desirous of establishing a standard to cover purchase of our gasoline and oils. It is our expectation that we will carry the following grades of lubricating oil: light, medium, medium heavy, heavy, transmission.

We also wish to establish a standard for the purchase of cup grease, soaps, etc., and I have wondered whether you were in position to furnish me with any information on this subject which would be of service in establishing an equitable standard and one which would put us in position to check quality of goods delivered so that we can recommend our goods to our patrons without reservation. The purchase of oil is an exceedingly difficult situation to meet in this town, as the general sales tactics adopted by the oil companies seem to be to criticise and knock their competitors unreservedly.

If, however, we can advise our customers that by chemical tests we have selected certain grades of oil as the best obtainable, it will place us in a position where we can be entirely independent of any influence which might otherwise be exerted.

I will appreciate any information on this subject that you can give me.—Horace Slingluff, Mid-City Garage & Motor Supply Co., Baltimore, Md.

There is little printed information on the subject of testing oils, and what little there is is rather technical.

Here are the directions for making the simple tests:

Heat Test—The reaction known as the heat test is very simple. Simple though it is, perhaps there is no other test which indicates so decisively and so quickly the purity and degrees of refining of an oil, as well as its durability, when such an oil is subjected to the extremely high temperatures met with in internal-combustion engines.

The heat test consists of heating a sample of oil up to a temperature of between 300 to 500 deg. Fahr. (depending upon the flash point) and holding it at this temperature for a period ranging from 10 to 15 min.

Two distinctive results are obtained: (1) A good durable oil shows a slight darkening from its original color, the change in color being only to a darker shade, the oil still remaining clear and without sediment. (2) A poorly refined and impure oil shows an immediate alteration in color, quickly changing to a dense black. As the heat is maintained a black precipitate settles out. The quantity of this precipitation depends upon the impurity of the oil. Just as different samples of oil, good or bad, retain their color or blacken during the heat test, just so will be their reaction when exposed to an even higher heat in an explosion motor, and it is reasonable to conclude that a continuous precipitation of black sediment in impure oil will rapidly destroy its lubricating properties and within a short time be the cause of costly wear of all parts in moving contact.

Emulsion Test — The emulsion test shows the quality of lubricating oils about as accurately as does the heat test on straight or blended hydrocarbon oils only; wherever animal or vegetable oils are present this test ceases to be reliable. The emulsion test consists of vigorously shaking a sample of oil with about an equal volume of water in, say, a 4-oz. bottle and allowing same to stand for 24 hr. after shaking.

Results: (1) A good durable oil shows a very slight white line of demarcation where the oil meets the water below it. The water upon which the oil floats may be nearly clear or slightly cloudy in appearance, thus showing the absence of acid compounds. (2) A poorly refined oil will be seen to have emulsified or permanently mixed with the water, and to have formed a semi-fluid, reddish-white or brownish-white mass, containing a slight layer or globules of oil. This curdled mass extends nearly to the bottom of the bottle and floats upon the remainder of the water, which is a milky white. Emulsification shows the presence of acid products.

Practical Road Test—Let all oil be drained from the motor to be tested and new oil put in, the exact weight in pounds being carefully recorded. The amount of fuel should also be ascertained, and a reading of the speedometer taken. Then let a test be run over an average road, including steep hills, straight level stretches, etc., for a distance of 50 or even 500 miles, if desired. At the end of the run all oil should be drained from the motor and weighed, the amount of gasoline noted and the total distance covered. The number of miles per gallon of fuel and oil can then be found by dividing the total mileage run by the quantity of fuel or oil in gallons. Next let a similar test be run for the same distance, over the same road, and under the same weather conditions, using another oil.

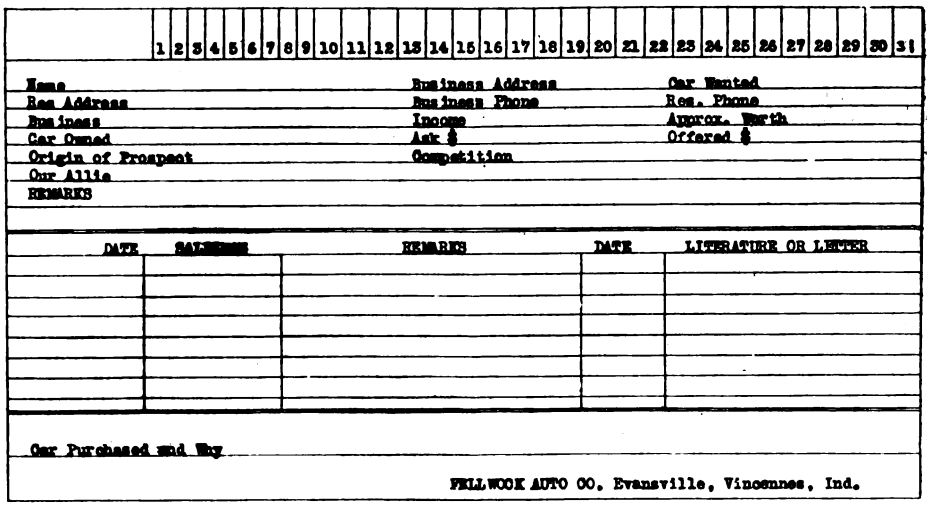
Four Manufacturers Opinions

Below are four opinions recently received regarding the purchase of oil, greases and soaps:

Hudson Motor Car Co.:

"We recommend our distributers and dealers to use the oils which the factory has previously found to be O.K. Every year a great deal of testing is done to determine those oils which are best suited to a particular model of car. The same thing applies to greases, which, before the factory will recommend, are thoroughly tested at our plant under the actual conditions of the car.

"Concerning soaps, we have no set specifications, but for body washing we recommend the use of pure, cool water. The pantasote of the top is cleaned



Prospect card with complete information on it. The reverse side might contain a complete description of the owner's present car

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with clear water containing enough castile soap to provide sufficient alkali to cleanse. For the care of the enamel on the hood and fenders, there are a number of good preparations on the market for removing dirt and cleaning the enamel which can be secured from any accessory house. We also recommend careful washing with ivory soap and water, being careful to remove the suds before they are allowed to dry and polish with a chamois.

"Fuller's earth and water can also be used to rub off the dirt, if it is very obstinate, without harming the finish.

"We recommend putz pomade, applied with a very soft, clean chamois skin for the cleaning of the lamp reflectors.

"In selecting the cylinder oils, a great deal depends upon the requirements and the kind of oiling system of the motor itself. For summer use we recommend a flash point around 400 deg. Fahr., with a fire test correspondingly higher.

"In the medium grade of oil we advise the selection of an oil which under test shows very slight signs of sulphuric acid compound. Oils for winter use should have a cold test which is lower than the climate in which the car is to be used. There should not be too great a difference in the viscosity of the lubricant between the 70-deg. and 212-deg. test.

"Transmission oils and greases should be selected for wearing qualities which can only be found by test, and should not become solid under extremely cold conditions."

Pierce-Arrow Motor Car Co.:

"We have had so much trouble in the past years with the grade of lubricating oils and greases used in our cars that we considered it necessary to have these made by one concern to our own specifications. We have, therefore, made arrangements with the Enterprise Oil Co., Buffalo, to compound the oil and greases that we use in our cars.

"We recommend our customers buying their oil direct from this firm, the quality of whose output we largely control. We feel that when any of our customers use these oils or greases they are using the very best lubricant it is possible to use in our cars.

"There are, of course, other oils and greases that are equally as good, but as we do not in any way control the quality of their product we have no real asurance that what they supply a year from now will be the same as what they might be supplying at the present time."

"Under the above circumstances we think it, therefore, perhaps best not to give you any specifications for the oil and greases that we are using."

Packard Motor Car Co.:

"The following is a paragraph taken from our Twin-Six Instruction Book, which we believe will give the information desired regarding the lubricants recommended for Packard cars:

"'Lubricants.—Where cylinder oil is specified in the schedule of lubrication, oil produced by reputable refiners and having the following properties, is recommended: Gravity (Baume), 28.5 to 29.5; viscosity, 100 deg. F. (Saybolt), 285 to 300; fire, 495 deg. to 500 deg.

"'At the factory Whittemore's compound No. 7 is used in the transmission and No. 45 in the rear axle. These or any similar compositions made by reputable manufacturers will give satisfactory results.

"'The universal joints and steering gear cases are filled at the factory with Spicer grease. If not obtainable, use graphite grease for the universal joints and a mixture of half cylinder oil and half graphite grease in the steering gear case.

"We do not recommend the use of any particular soap, except that only the purest kind be used, and then only for purposes of removing grease."

Dodge Brothers:

"1. Flash on any grade of oil not under 390 deg. F. Fire test we do not consider.

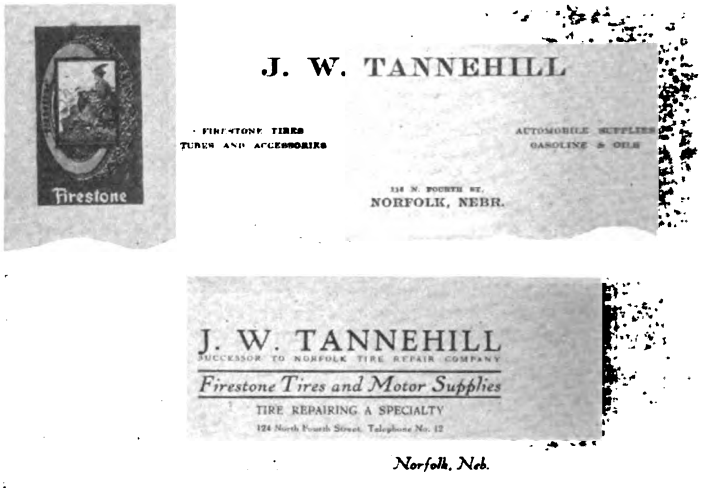
"2. The selection of both grade and the kind of oil can only be determined by actual testing noted above.

"3. The same as No. 2 in the case of greases. The particular car, the tightness of cases, housings, hubs, etc., must determine consistency. Efficiency tests must determine kind. Above all, a grease should be selected that has the least change in consistency from 0 deg. to 200 deg. F.

"Soaps of the green oil variety free from abrasives or alkali are best."

How a Good Letterhead Was Improved

Original letterhead is shown above and improved design below. The latter is neater because the wording is grouped instead of scattered



A Fine Prospect Card

Editor Motor World: Our prospect card has been nothing but a blank card on which we wrote the dates of calls and remarks, but this does not give us the information we desire.

The writer is enclosing a proof of a card, which appeals to him (see preceding page). The numbers at the top of the card represent the days of the month. Little steel clips will be inserted at the top of the card at the date that future calls should be made and in this way all the cards can be kept in one file and under our eyes all the time. Would be pleased to have you criticise this card and suggest any recommendations you might see fit.

The writer is certainly impressed with your magazine and in fact uses it as a reference. You are always up to date in everything that you suggest and it is without doubt in my mind the best magazine of its kind published.

This is the reason I would like your suggestion on a follow up card.—J. W. Walton, Fellwock Auto Co., Evansville,

Your card is very complete, but you might add on the reverse side full specifications and details regarding the prospect's present car, such as the condition of the paint, bore and stroke of motor, and so forth.

S. A. E. HORSEPOWER

Editor Motor World: Will you please give me the figures for figuring the S. A. E. rating?—E. C. Mathews, Temperanceville, Va.

The S. A. E. horsepower rating is figured from the formula,

$$\text{H.P.} = \frac{D \times D \times N}{2.5}$$

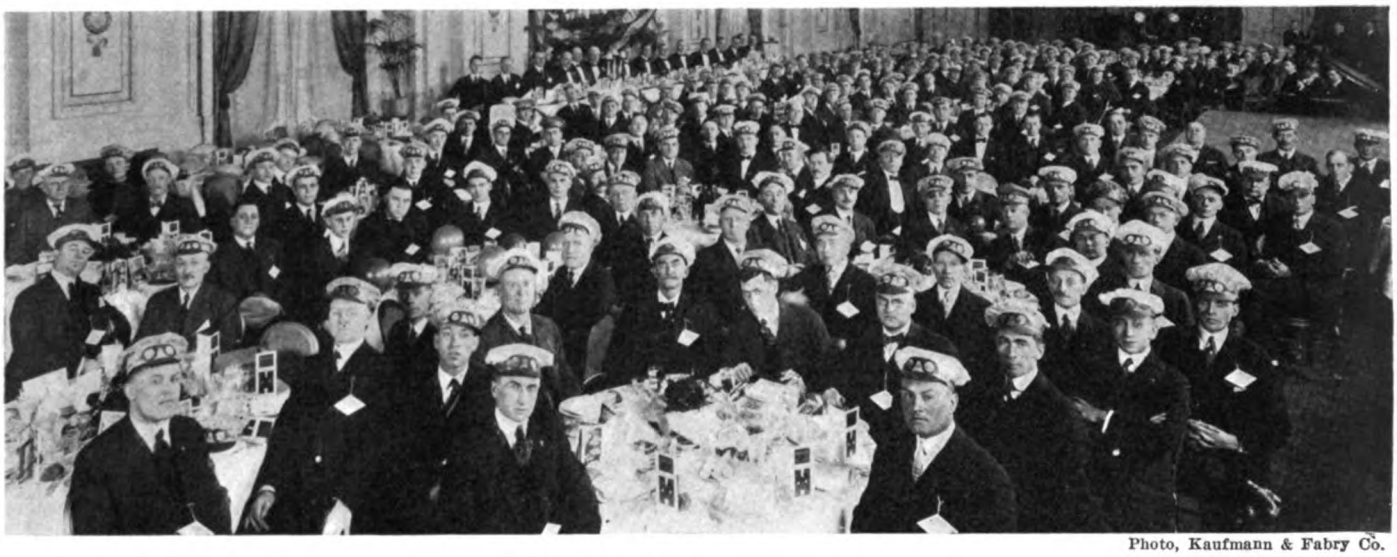
D equals the diameter of the cylinder bore in inches and N equals the number of cylinders.

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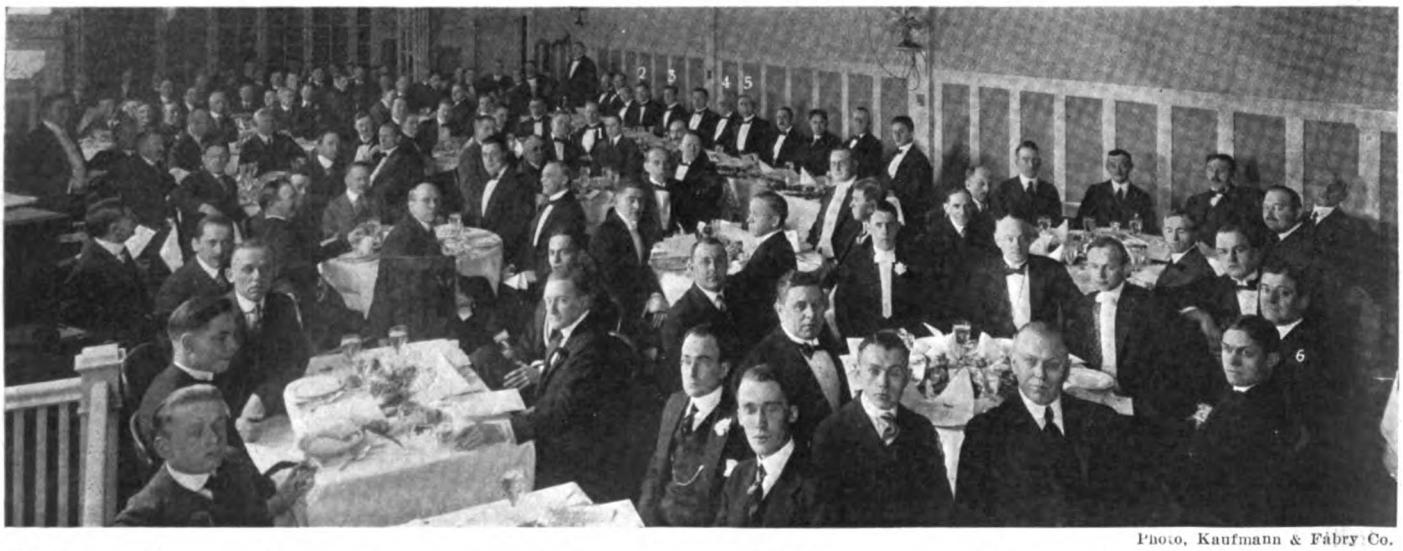
Photo, Kaufmann & Fabry Co.

Where the Elgin Dealers Gathered During the Chicago Show



Photo, Kaufmann & Fabry Co.

Paige Held One of the Largest Dinners of Show Week



Photo, Kaufmann & Fabry Co.

Championship Award Dinner of Contest Board of A. A. A.

The numbered persons are: 1—*Ralph Mulford;* 2—*John Aitken;* 3—*Dario Resta;* 4—*Dr. H. M. Rowe;* 5—*Richard Kennerdell;* 6—*James Allison* (*See page* 54)

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SCIENTIFIC CONSTRUCTION

GARAGES
SHOWROOMS
REPAIRSHOPS

By Harold F. Blanchard

Accessory Service Station Combined with an Accessory Store

EDITOR Motor World: Being a constant reader of your magazine, I take the liberty of asking you for some information about a building I intend to erect on a lot 33 x 90 ft., with a public lane on the side about 16 ft. wide and a lane on the back about 20 ft. wide.

It was our intention to have a retail store at the front of the building, with repair plants in the basement or upper story. We do not intend to go into the garage business, but will do everything but sell the car—that is, repair batteries, magnetos, coils, speedometers, tires, etc.

We thought of having the repair departments in the basement, the front of the ground floor for store purposes and the back for keeping cars in for repair. Upstairs we intend to have the office, stockroom and mail-order department. It is our intention to have air outlets on different sides of the building to enable our customers to receive immediate attention as far as air and water are concerned.—Michael Ert, Winnipeg, Man.

We believe you will find it much more satisfactory to use the basement for a stockroom and do you repair work upstairs, using the ground floor for accessory store and garage for cars that are being repaired.

The accessory store, Fig. 3, is a square room, with entrance at the center and counters and shelves all around. It is large enough so that you may have showcases or a large display table in the center as well. Back of this room is the garage, which will house sixteen cars placed two deep.

Above the store is the office, and back of it are separate departments for speedometer repairs, electrical repairs, battery repairs and vulcanizing. Two plans have been drawn for these departments. If you have light on all three sides of the building we believe that Fig. 1 will be more satisfactory; but if you have light only on one side and in the rear, Fig. 2 should be used. However, if you use skylights either plan may be used, whether you have lights on the sides of the building or not. It would not be a bad idea to have skylights anyhow, as the more light you have the better it will be.

This is the reason these departments were put on the second floor and not in the basement. Plenty of light is essential for repair work, but is not so necessary for receiving and shipping goods.

On the other hand, there is no objection to storing your stock in the basement, providing you take ordinary care in making your cellar waterproof. We know of any number of concerns which carry large stocks in their basements and find no objection to it.

The receiving and shipping room has been placed in the center of the basement, so that a minimum amount of time is spent in going from it to any part of the floor. With this arrangement one-half the number of steps are saved, as would be the case if the room were in the front or rear.

The room may be conveniently divided into four compartments—large accessories, small accessories, tires, and paints, oils and greases.

These four departments are the same size and are drawn merely because we do not know enough about your own business to say what the correct proportions of the various areas will be. However, we believe that you will find this division satisfactory.

The room for paints, oils and greases should be fireproof and be provided with a fire door.

The tire room should be shut off from the other departments and should be kept cool and absolutely dark.

A small elevator should run from this room to the street so that goods may readily be received and delivered.

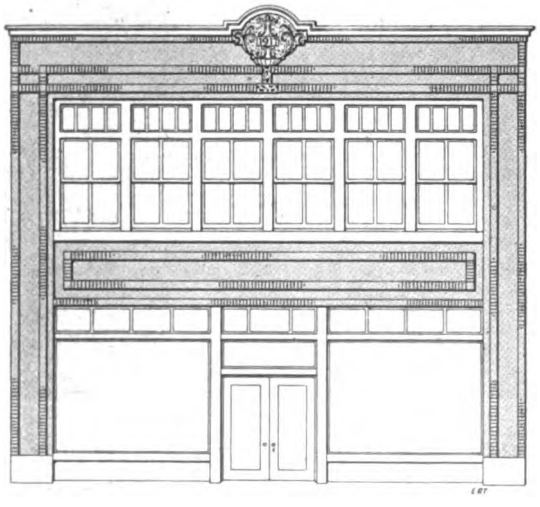
You mention water outlets for filling storage batteries, and we should like to know the details regarding this plan, as we believe it is of interest. How will you connect these with your distilled-water tank, and will you provide hydrometers for the use of owners? Just how do you intend to work this out?

READ THIS, PLEASE

Try to give us full information when you write to this department. Draw a rough plan of the block on which your plot is located, and give us some idea as to the capacity of the different departments.

We would rather draw a plan for you than send you plans from back issues—because you will find it more satisfactory.

There is no charge for this work.



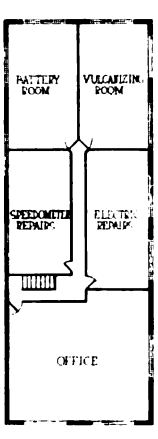


Fig. 1—Second floor

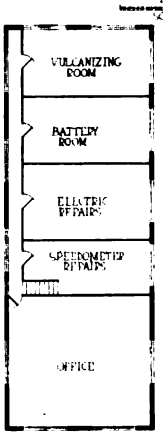


Fig. 2—Second floor

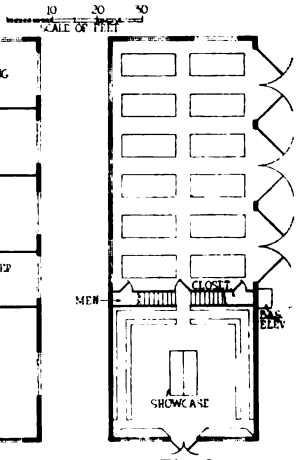


Fig. 3—Ground floor

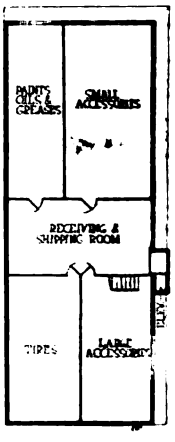
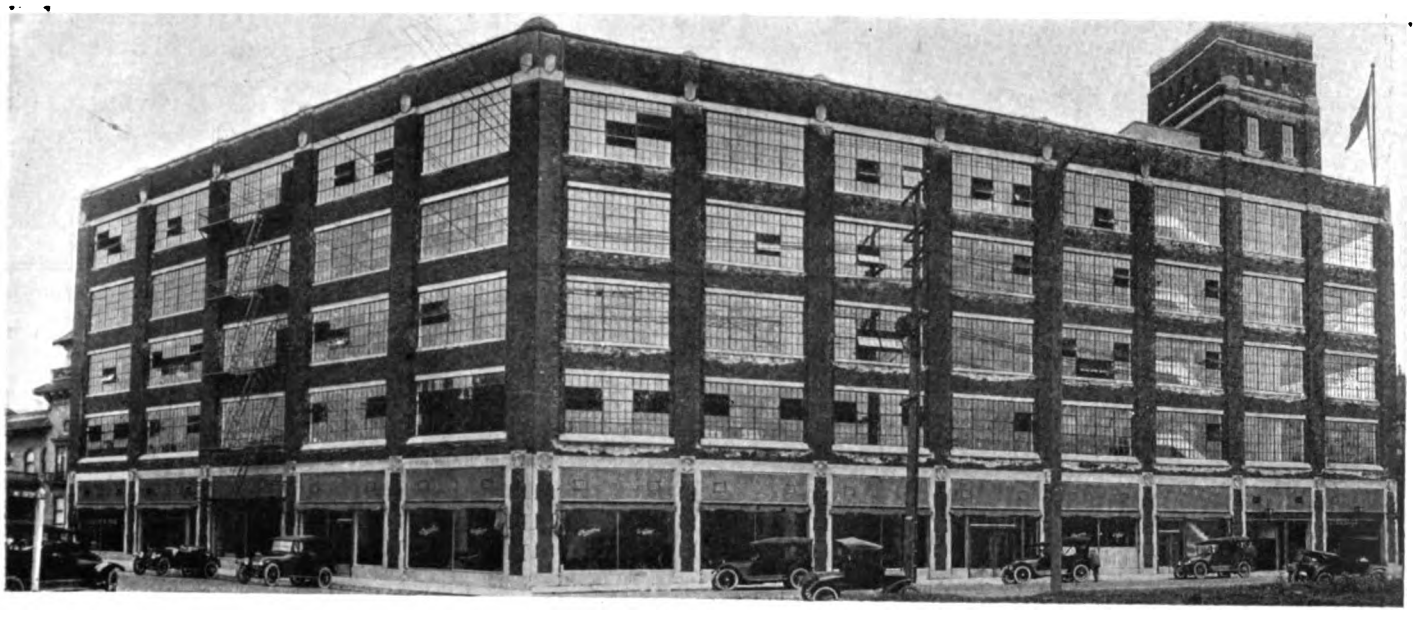


Fig. 4—Basement

Left—Front view of accessory store and service station. Right—Plan of two stories and basement with alternative plans for second floor layout

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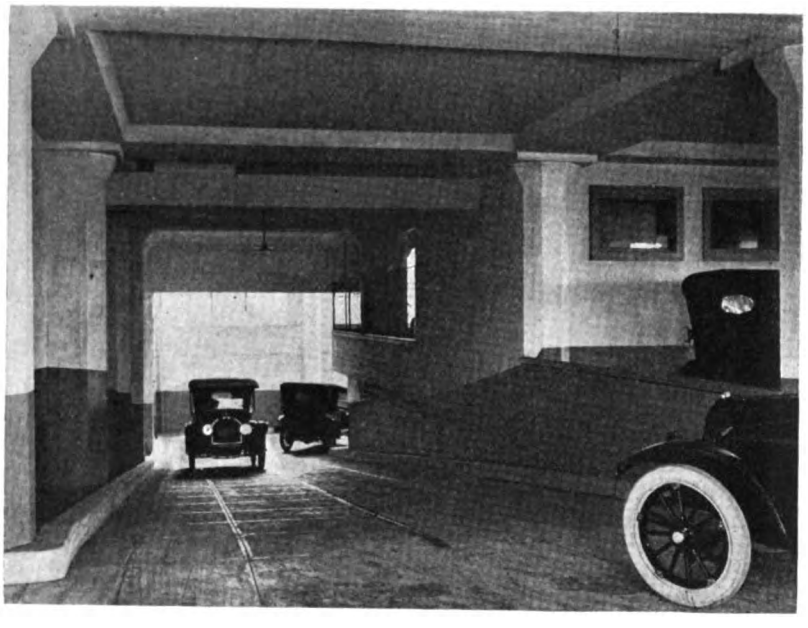
Roof for Testing in Los Angeles Overland Branch

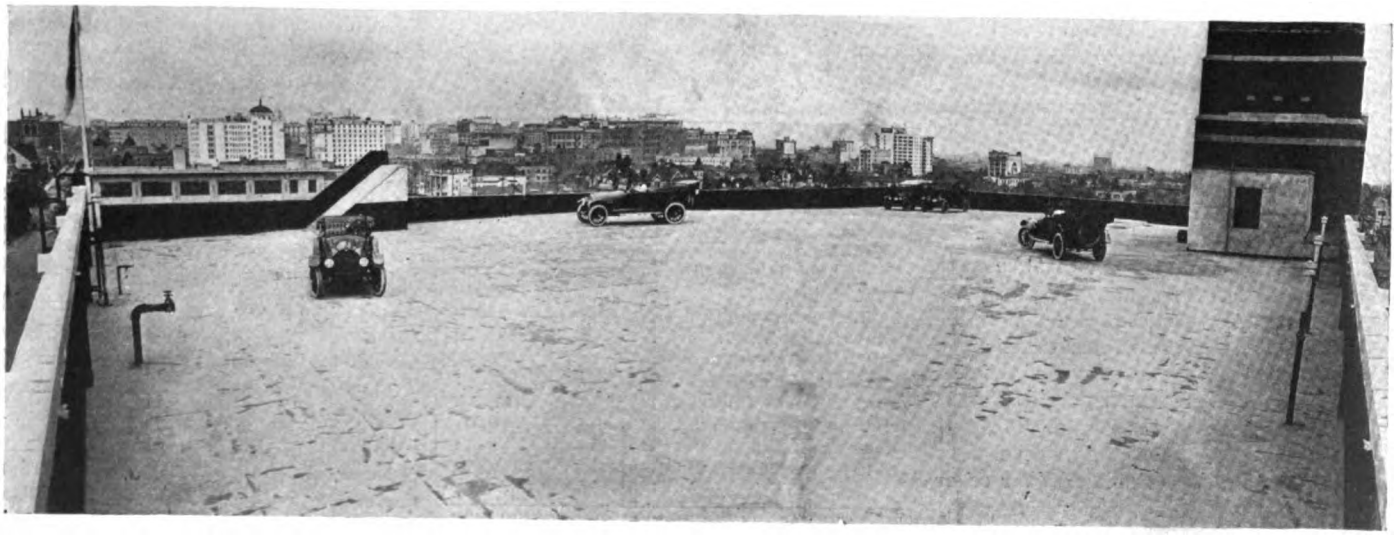


AN innovation in the Overland branch just opened is the use of the roof for testing, thus avoiding the dangers incident to operating the cars on the street. The roof is asphalted.

The first floor is for new and used car departments and offices. A ramp with an easy 6 per cent grade leads the way to the second floor, which is used for light repairs for which no charge is made. Monkey wrench or screwdriver jobs or any work taking less than 30 min. is free during the life of the car.

The shop, on the third floor is unusually well equipped, a complete set of bearings may be scraped in 90 min. it is said. Cleanliness is a feature; every motor must be sprayed before work can be started. The fourth floor is for painting and trimming, and also for the rebuilding of used cars, which are invariably repainted, equipped with new tires and sold with a guarantee. A complete stock of accessories is carried on this floor. The fifth floor is for new car delivery.





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A Department of Better Mechanics

No. 9

VALVE AND IGNITION TIMING ON THE CHALMERS 35

Incorporating a method of removing the timing gears

COMPLETE retiming is rarely necessary—usually only when the engine is being overhauled or when some part has become worn and noisy due to careless lubrication by the driver.

INDICATION OF TROUBLE.—1. Gradual loss of power, noisy valves or noisy gears.

Tearing Down

1. Remove hood.
2. Drain radiator.
3. While radiator is draining, cover fenders with a cloth to protect the finish.
4. Remove radiator dash tie-rod.
5. Remove lamp cross tie-rod.
6. Remove nuts and lock washers from studs at bottom of radiator.
7. Remove upper hose clamp and connection.
8. Remove two nuts and disconnect inlet pipe to cylinder.
9. Loosen lower hose connection at radiator and remove.
10. Lift radiator upward and forward until it is free.
11. Flush radiator out with clean water and place it so that it will drain and not be damaged.

Removing Fan and Pulley

1. Loosen clamp bolt fan adjusting lever.
2. Take off nut on fan-shaft; remove washer and lock ring and lift fan shaft from its slot. The belt may now be slipped off and the fan removed.
3. Remove the small screw in the fan pulley on the crankshaft, permitting the locking collar to be unscrewed.
4. Remove fan pulley and sleeve.
5. Remove all bolts holding gear cover to engine.

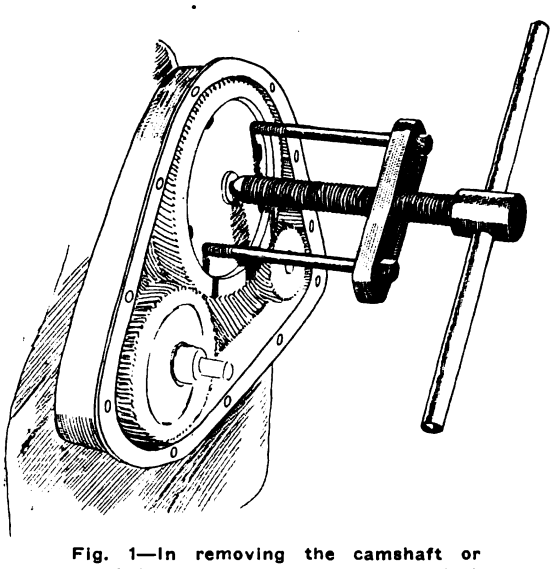


Fig. 1—In removing the camshaft or crankshaft gear two carriage bolts which are part of the puller are screwed into tapped holes in the web of the gear

6. Pry case free, taking care not to destroy the cork packing. This should stick to the cover and be removed with it.

Removing Timing Gears

These gears need only be removed when to be replaced or in a general overhauling of the engine, Fig. 2.

1. Remove plunger on springs in gear shaft ends.
2. Remove inspection hole cover on flywheel and crank motor until 1-6-IN-O is at the top. This point can be felt by holding a file through the hole, with the point resting on the engine side of the flywheel face, and slowly cranking the motor. A hole is drilled in the flywheel at this point and the file will drop into the hole.
3. Mark gear faces so that they may be returned to the same position. (*This is not essential if new gears are to be installed, but for ordinary overhauling will facilitate the assembly.*)
4. Clip in place wires locking camshaft gear retaining bolts and unscrew bolts.
5. Remove dowel plate.
6. No puller is required to remove this gear, as each side of the gear is drilled and tapped 5/16 in., permitting two cap screws to be used to force the gear from the flange. *The gear MUST be removed evenly.*
7. Use the puller shown in Fig. 1 to remove the crankshaft gear.
8. Remove bonnet base strip on generator side.
9. Remove cotter pin and nut holding generator drive gear on its shaft.
10. Remove timer control rod and spring.
11. Disconnect wire at rear of generator.
12. Disconnect universal coupling.
13. Unbolt generator from base and lift generator off. (*The shims should be marked and kept so they may be returned to the same position.*)
14. Remove wiring from timer and plugs. Mark so that they may be returned.
15. Free timer from engine and remove, *noting position of distributer*

Previous Articles

Subject	No.	Date of Issue
Overland—Main and connecting rod bearings	1	Dec. 13
Cadillac—Cam and fan-shaft driving chains	2	Dec. 20
Maxwell—Rear axle repairs	3	Dec. 27
Chevrolet—Clutch repairs	4	Jan. 3
Borg & Beck—Clutch adjustments	5	Jan. 10
Hudson—Oil pump adjustments	6	Jan. 17
Reo—Clutch adjustment	7	Jan. 24
Buick—Rear axle adjustment	8	Jan. 31

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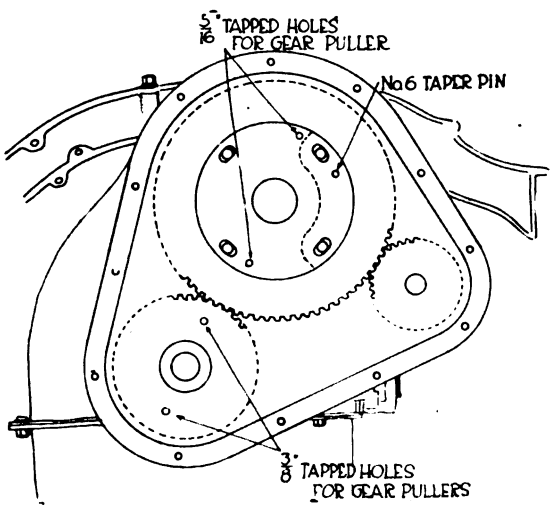


Fig. 2—Diagram showing location of tapped holes in camshaft and crankshaft gear

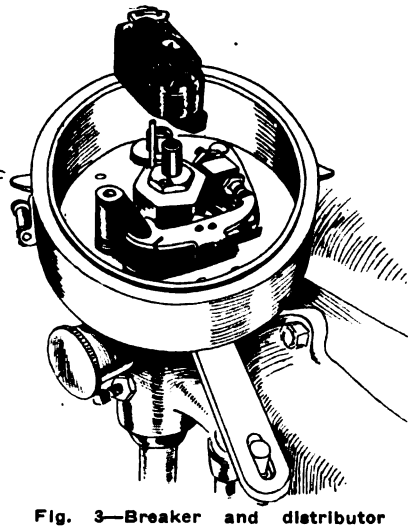


Fig. 3—Breaker and distributor mechanism. The brush is readily removed

brush, so that the timer may be replaced in the same position.

16. Remove the screw on timer drive shaft bearing plate, freeing timer drive shaft.

17. Remove screws on rear bearing plate.

18. Drive generator drive shaft out of gear. (*It is poor practice to pull this gear off.*)

19. Inspect all parts for wear, clean thoroughly and provide new parts necessary.

THE ASSEMBLY

1. Replace generator drive shaft in housing and DRIVE the gear back into it.

2. Replace crankshaft gear.

3. Adjust valve tappets so that they have .002 in. clearance between tappet and valve stem. *The camshaft may be turned from the front to do this.*

4. See that the point 1-6-IN-O is still at the center of the inspection hole in the flywheel case.

5. Turn camshaft *counter clockwise* until the inlet valve or number 1 cylinder starts to open. This can best be felt by placing a screwdriver in the slot in the valve, as in grinding. *By turning the valve back and forth the instant it starts to open may be felt.*

6. Press camshaft gear in position with the teeth so meshing that the retaining bolts stand in the center of the adjusting slots.

7. Replace retaining nuts on camshaft gear and bring them up so they pinch the gear onto the flange.

8. Turn flywheel backward about one-eighth turn and then back in direction of rotation, at the same time turning the inlet valve of No. 1 cylinder with a screwdriver.

9. Stop turning the instant the inlet valve STARTS to open.

10. Note whether point 1-6-IN-O is directly beneath the inspection hole in the flywheel case.

11. If it has not yet reached this point, using a drift, drive the flange nuts on the camshaft gear back in a clockwise direction twice the angular distance that the point 1-6-IN-O must go to reach the vertical.

12. If it is past this point, drive gear in opposite direction in a similar manner.

13. Check timing for No. 6 cylinder in same manner.

14. If dowel pin holes in gear and flange do not line up, drill new holes and replace strap.

15. Tighten bolts and lock with wire.

16. Replace timer gears and generator *taking care not to draw the bearings too tight.*

17. Set motor on 1-6-IN-O with inlet valve of No. 1 cylinder just opening.

18. Set distributing brush on timer to connect with No. 6 terminal, or spark plug wire.

19. Set timer in retarded position.

20. Set hexagonal cam on breaker so that the points are just breaking, Fig. 3.

21. Lock in position with lock nut.

22. Adjust breaker points to about .015 in. clearance, and lock adjusting nuts in position.

23. Check adjustment of ignition. *An allowance of 1 in. late is permissible.*

24. Replace timing gear cover, making sure that end thrust plungers and springs are in place, and that cork packings are not broken. *This should be set in shellac on the case side only.*

25. Replace fan pulley, fan belt and fan.

26. Replace bonnet base strip.

27. Replace radiator and hose connections, making sure that all connections are tight. *Common rubber cement should be used on all joints.*

28. Replace hood, fill radiator.

Maintenance

1. Keep valve tappets adjusted to proper clearance.

2. Keep oil level up and investigate the instant the indicator shows no oil.

Things Every Mechanic Should Know

How to Make a Set of Lathe Tools

A GOOD mechanic knows that accurate, efficient work demands tools that are correctly made. Almost any piece of tool steel may be forged and ground to a shape that will remove stock in a lathe, but there are certain shapes that will remove it most efficiently. Tools made uniform in material, treatment and shape breed familiarity with the work that they will accomplish, and the result is a good job.

The lathe tools described are standard, found by experience to be easiest to make and keep standard, fit the widest variety of jobs, and be most readily ground. This is the way to make the tools.

Forging

1. Have the forge fire clean and concentrated.

2. Heat the end of the bar. *Do not heat more than 2 in. of the stock at the end to be forged.* Extended heat makes the forging difficult. Care should be taken not to burn the steel. Carbon steels are best forged at red heat, high speed steels at a cherry red heat.

3. If the tool is of the necked type, such as No. 1, 2, 5 or 7 of the standard tool shapes, Fig. 1, first break down the point, as shown in Fig. 2, No. 2. The appearance should be that shown in No. 3 after this step.

4. Working with the same heat, if possible, draw the point out, as shown in Nos. 4 and 5, and form it to the desired shape. *All forging should be done in one heat, as repeated heating is not good for the steel.*

Hardening the Steel

The treatment varies with the steel, but this general rule may be followed:

If the steel, after quenching, shows a coarse grain on being broken, it has been heated too hot. If the grain is stringy it was not heated enough. When plunged at the right heat, the resulting grain will be very fine.

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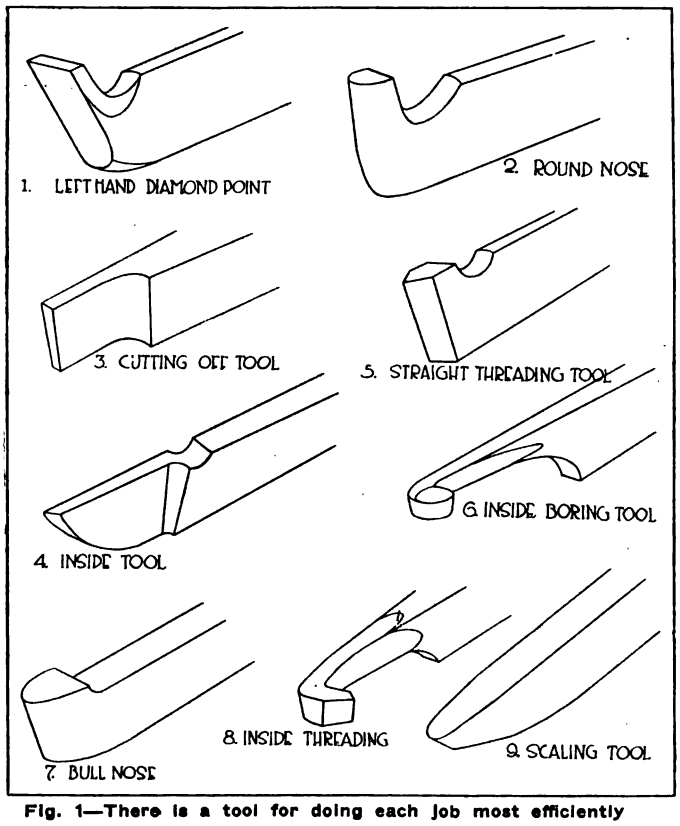


Fig. 1—There is a tool for doing each job most efficiently

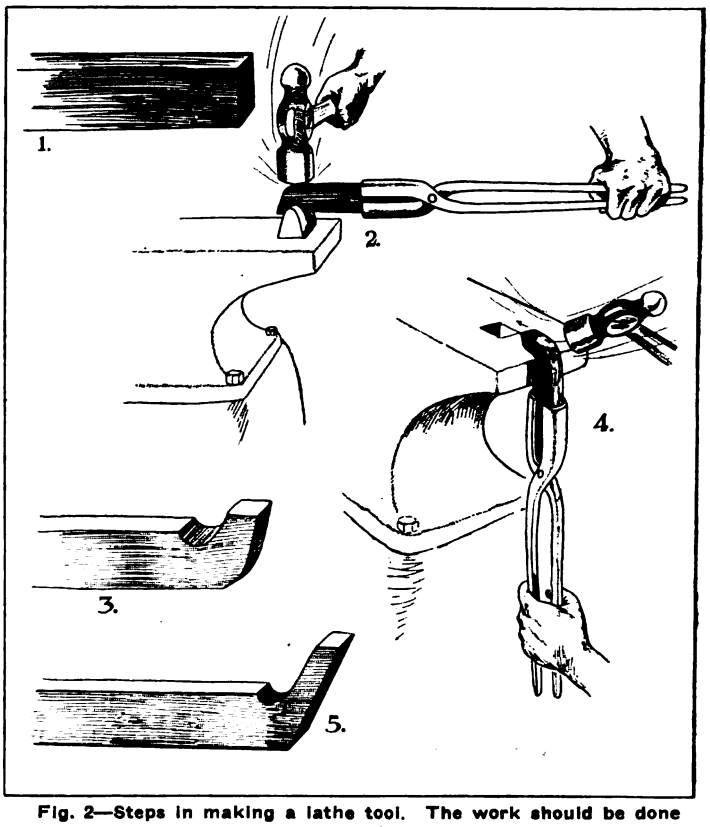


Fig. 2—Steps in making a lathe tool. The work should be done during one heat.

High speed steel, usually, should be heated until the tip of the tool starts to melt, and then plunged in oil, or buried in common salt until thoroughly cool. High carbon steel gives the best results when heated to dull red and plunged in oil.

Only the tool point proper should be heated to the plunging temperature, the heat applied slowly at first and then the blast turned on and the point heated to the required plunging temperature.

The tool should be plunged into the oil when the heat is INCREASING, and at the instant the point reaches the plunging temperature—dull red—in the case of carbon steel; fusing in the case of high speed steel. This is particularly necessary with high carbon steels, as heating the steel white hot, allowing it to cool to dull red and then plunging it in oil will make a poor tool.

High speed steels, after hardening and grinding, are ready for use. Carbon steel tools, however, must be tempered.

This may be done in two ways, the best being to plunge only the point of the tool in oil after heating to dull red, thus leaving some heat in the heel of the tool.

When the point is black, remove the tool and rub the cutting edge with emery paper mounted on a stick. Watch the point closely and as the heat is driven from the heel to the point, the color of the surface being polished will turn light straw, dark straw and blue.

When the point of the tool is straw color plunge the whole tool in oil and cool it entirely. The other method of tempering is to cool the tool after the first heating, polish the point, slowly heat it again until straw color, and then plunge it.

Almost any grinding wheel may be used for grinding the tool, but care must be taken not to draw the temper, or burn the tool. The tool should be held lightly against the wheel and frequently cooled in water. Grind the tools to the shape desired, following closely as possible those illustrated. Finish the cutting edges with an oil stone.

Fig. 3. shows a tool bit holder and standard set of high-speed tools. These are excellent for repairshop purposes, though expensive. The shapes illustrated will cover a great variety of work, and the tool should be changed to suit the work, rather than regrinding the tool each time, as would be necessary were not a complete set at hand.

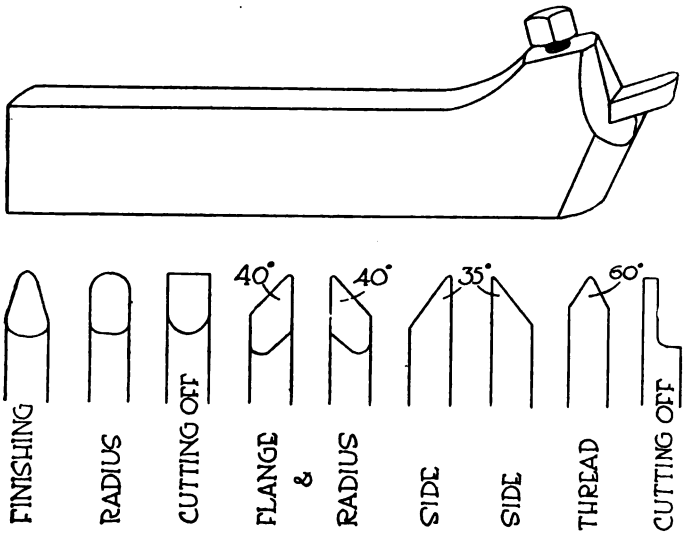


Fig. 3 — Above — Tool bit holder with various types of tools made of high-speed steel

What Are You Having Trouble With?

Let the editor of Better Mechanics help you in solving the difficulties which arise in your repairshop. If you are doubtful how to time a certain motor; if you feel that there is a quicker way to remove a certain clutch; if you spend too much time in adjusting a certain carbureter, write this department.

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Ohio Wants One-third Increase

Columbus Show Draws 75,000 and Dealers Expect to Sell 24,000 Cars in 1917

COLUMBUS, OHIO, Feb. 3—The annual Columbus automobile show, held in Memorial Hall Jan. 27 to Feb. 2, showed the importance of Columbus as a distributing center. In all thirty dealers exhibited approximately forty-five makes of cars. The attendance was better than ever before, and numbered approximately 75,000.

All of the dealers are enthusiastic over the prospects for business during 1917. Their field men, in canvassing the territory covered from Columbus, report extra bright prospects.

Columbus is the distributing center for approximately twenty counties in central Ohio, which include Franklin, Fairfield, Hocking, Perry, Coshocton, Muskingum, Fayette, Ross, Pickaway, Clarke, Union, Madison, Delaware, Knox, Morrow, Vinton, Champaign, Logan, Hardin and Marion.

The total population of the district for the 1910 census was 854,000, and the estimated population at this time is 975,000. In the territory covered there were 33,957 cars registered by the Ohio automobile department in 1915, and in 1916 the number was increased to 47,103. The difference is approximately 14,000, but most of the dealers believe that the territory in 1916 absorbed 18,000 to 20,000 cars.

Expect One-third Increase

A majority of the larger dealers anticipate about 33 1/3 per cent greater business in 1917 than in 1916. Thus, taking 18,000 as the number of cars sold in the district, the number that will probably be sold during the present year is about 24,000. But some of the dealers are inclined to believe that even a larger number will be sold, judging from general prosperity in industrial and agricultural sections, and they are placing the total close to 30,000.

The number of dealers in this territory is approximately 750 and the number of garages about 1000. An estimate of the number of exclusive repairshops shows that there are about 400 in the territory, possibly less.

Central Ohio has a very diversified industrial condition, and is sharing in the general prosperity of the country. While it is not strictly manufacturing, Columbus is known as one of the largest manufacturing centers of the Middle West when its population is taken into consideration. There is a maker of large manufacturing plants, employing from 350 to 1000 men, but on the whole the factories are generally of the smaller kind and very diversified. Iron and steel play an important part in the general prosperity, as do brick and clay products, vehicles and automobile parts, farm implements, mining machinery and novelties.

As another evidence of the industrial prosperity which has developed, bank clearings in 1916 totaled $487,459,000, an increase of $138,134,000 over 1915, when the clearings were $349,324,000. This is the largest increase in the history of the Columbus Clearing House, and shows the vast strides made during the year just closed.

In the country surrounding Columbus, agriculture is carried on to an intensified degree. All of the staple crops are raised, including corn, wheat, oats, tobacco, hay and seeds.

The high prices which have been prevailing for farm products have been reflected on the agricultural population in a large increase in the number of cars sold. Travelers who have covered all parts of central Ohio claim that the farmer will buy more motor cars during the present year than ever before. The farmer has his bank account and is disposed to spend it for both pleasure vehicles and motor trucks. In addition, the good-roads movement is progressing satisfactorily in Ohio, and this fact alone will encourage the purchase of more motor cars.

It is also reported that the farmer will buy higher-priced cars than ever before. Of course, there will be an immense sale of the lower-priced vehicles, but cars ranging from $1,200 to $2,500 are being bought in larger numbers every year in this strictly agricultural section of the State.

Mechanics and skilled laborers of every kind have been especially prosperous, and many are now in the market for motor cars. The high war prices and prices paid for the manufacture of war munitions have very much widened the market for motor cars among the higher class of laborers. Some of the dealers anticipate an especially good demand from that source, and have special salesmen whose business it is to work up that class of trade.

One of the worst drawbacks to a more active demand for automobiles at this time is the inability of dealers to get cars from the factories. Because of the shortage of freight cars and motive power on railroads and the congestion at junction points freight shipments of motor cars are slow. Of course, dealers in central Ohio are able to drive cars through from factories, many of which are in Detroit or Flint. Hundreds of cars have been driven through during the month of January, and arrangements have been made to drive many others. This will be possible as long as the frost is in the ground, but when spring arrives the roads may be impassable and then there will be a shortage of cars.

YORK EXPECTS A BUYING BOOM

Farmers Have Money and Mechanics Will Ride

YORK, PA., Feb. 1—The success of the second annual exhibition of the York County Automobile Dealers' Association, held during the past week in the tabernacle garage of the J. W. Richley Auto Co., is reflected in the large display of cars and accessories, increased number of exhibitors and car sales, and an attendance which numbered 15,000 persons. The attendance of the first 2 days was affected by the inclement weather. Approximately 100 cars were sold, and the exhibitors state that a conservative total of new prospects secured directly through the show would reach at least 500. The amount of business done is double that of last year.

The exhibits of the twenty-two dealers, four local car manufacturers and fourteen accessory dealers completely filled every bit of the 40,000 sq. ft. of floorspace. Two hundred cars, representing fifty-four different makes, were included in the display. The display of trucks was a feature of the show, more than a dozen kinds being displayed. Last year thirty-nine different makes of cars were on exhibition. The officers of the association are: J. W. Richley, president; John Y. Burgard, vice-president; John P. Oden, treasurer; T. S. Pfeiffer, secretary.

The year 1916 has been an epoch-making period for local automobile and accessory dealers, and the outlook for 1917 is said to be most encouraging. While the number of dealers represented in the

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dealers' association is but fourteen, there are at least thirty included in the local territory. Besides this, there are forty-five garages, twenty-five repairshops and sixty-five accessory dealers.

Car registration statistics for the year 1916 place the number at 5238 for the local territory, a gain of 2044 cars over the previous year. Of this number local dealers sold 90 per cent, or 1839.

With the present industrial boom and prosperity of this great farming community, car dealers predict 2500 car sales for the coming year, a business which will amount to at least $2,500,000. Wage-earners low down on the financial scale are now purchasing more cars than ever. However, the majority of these are low-priced cars. Increased wages to employees of industrial plants is given as the cause for this additional business. The estimated population of York County is 150,000, and taking the number of cars registered this would show that there is at least one automobile for every thirty persons.

York's influence as an industrial center, being the third diversified manufacturing city in the State of Pennsylvania, has been of vast importance to the automobile dealer. More than 300 industrial plants are located here, their products in 1916 amounting to more than $25,000,000. This is an increase of more than $4,000,000 for the past 2 years. The capital invested has increased from $29,328,000 in 1914 to $33,596,000 in 1916, and the salaries and wages from $6,232,000 in 1914 to $6,715,000 in 1916.

York's Big Industries

York points with pride to the largest ice-machinery factory in the world, the largest wall-paper mills in the United States, four automobile factories, eight monster silk mills and scores of other industries. More than 1500 cigar factories are located in York City and York County, and the internal revenue paid by these manufacturers in the York office of the ninth internal revenue district is greater than at any other office in the country. The output of these factories during 1916 was approximately 425,000,000 cigars and the internal revenue amounted to $1,272,595. In 1915 the internal revenue amounted to $989,709.63.

Deposits of the forty-two banking institutions of York and York County showed a gain of $3,213,850 for the year, the total deposits aggregating $26,736,427. Business so extensive as to exceed capacity of industrial establishments, profits boosted by war, and the resulting wage increases and bonuses are reflected in the bounding profits.

These in 1915 were $23,522,577, the largest recorded until that time. The bank clearings last year amounted to $53,801,514, as compared with $47,851,799 for 1915, a difference of $5,949,716.

Crop conditions in general have probably never been better in this county. The corn crop was second in yield in the State and amounted to 4,715,820 bu., the largest ever grown in the county. The average yield was 65 bu. to the acre. The tobacco crop was also the largest ever grown in the county, and was estimated at 7,500,000 lb.

This has put much money in the farmer's pocket, as the price of tobacco has advanced as high as 20 cents a pound, where heretofore he received from 8 to 12 cents. The production of wheat in this territory was above the general average, the crop yielding a little more than 19 bu. an acre. The price received for wheat, like many other crops, has increased, in this instance to $1.50 a bushel as compared with $1 a bushel a year ago. The oats crop was also the largest ever harvested in this county.

Dealer Conducts School During Show

Minneapolis Oakland Company Will Instruct Visiting Dealers and Mechanics

A NEW plan for boosting sales is being conducted by the Oakland Motor Co. during the Minneapolis show. Every Oakland dealer, mechanic and prospect has been given the opportunity to sign up for a course in a free technical school Jan. 27 to Feb. 10. The estimated number of undergraduates is 500.

This school aims to produce service, and thus build for future sales. The Oakland company reports that all its present cars are allotted and therefore there was no need to try to increase the demand at present. But the school teaches the dealer and mechanic everything there is to know about the Oakland.

The idea is based on the principle that much hot air does not make a salesman. He must have not only the talk, but also the goods. At this school an Oakland car is completely disassembled. Motor, transmission, rear axle, starting and lighting system and battery are completely taken apart. Nothing is hidden.

Four experts are present to tell the salesmen and mechanics how to put the car together again. W. G. Stroud, Oakland sales manager; Mr. Springer, Oakland factory system engineer; P. G. Dowton, of the Exide plant, and W. R. Knopp, from the Delco factory, are the chief instructors.

The company is urging its school pupils to attend the classes of the Electric Mfg. Co. being held at the same time in St. Paul. The hours at both schools avoid conflicting periods. The Oakland people circularized their dealers in Minnesota, the Dakotas and Montana before the school opened, urging them to attend. A card of the St. Paul educational plan was also enclosed.

R. H. Losey, of the Oakland company, says that the plan grew out of a conference of dealers held last October.

Gas Up 2 Cents in Savannah

SAVANNAH, GA., Feb. 3—The price of gasoline advanced 2 cents last week to 22 cents a gallon, and is slated for another rise of 2 or 3 cents within a day or two, which will bring the retail price to 24 or 25 cents a gallon.

This increase, it is pointed out, has become necessary by reason of the fact that for some time local dealers have been retailing gasoline at the wholesale price, and the time has now arrived when they can no longer afford to do this.

Some of the dealers still have on hand small quantities purchased some time ago. Some of this stock will be retailed at 20 cents, which figure prevailed with most retailers at the close of the week. However, gasolene can no longer be bought from retailers in Savannah for less than 24 to 25 cents.

It is understood the Standard Oil Co. filling station will withdraw all coupon books and will no longer retail gasolene at the wholesale price, but will instead sell to the small consumers at the retail price or probably 2 cents over the wholesale price.

Retailers point out that when gasolene sold for a lower price, say for one-half the present price, the loss to the dealers in retailing it at the wholesale price was not so great as it is at this time. Not only has the volume of the sale of gasolene increased, but likewise there has been an increase in evaporation and wastage owing to the large volume handled.

Smith Form-A-Truck Men Convene

BOSTON, Jan. 27—One of the big motor events of the week here was the convention of the New England Smith Form-A-Truck dealers called by John L. Judd, the New England distributer. He had as guests from the factory E. M. Elliott, general eastern sales manager, and J. D. Davis, of the Commerce Trust Company, of Chicago. After two days of conferences there was a big banquet at the Westminster at which Judd presided and more than 100 were present.

That Reilly Story

Pages 16 and 17

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Dollars Flow Into Wilmington—Munition Center

And the Cars Will Roll Out and All Over the Delmarvia Peninsula in Consequence

WILMINGTON, DEL., Feb. 3—The curtain was rung down to-night on the third annual show of the Wilmington Automobile Show Association, which, those directly concerned—local dealers and distributers—believe, was the most successful, from every angle, of all the motor exhibitions ever held here.

While Wilmington is the logical business center of the Delmarvia peninsula, comprising all of the State of Delaware and the nine counties of Maryland and two of Virginia lying between the Delaware and Chesapeake Bays, the population of which exceeds 300,000, it has direct control of the motor business only in New Castle County, Delaware, in which there are 150,000 people, dividing the balance of the State and other parts of the peninsula with Philadelphia. However, all of Delaware is the natural field for Wilmington, and it is being developed by the Wilmington distributers.

The State has a population of upwards of 200,000, with an unusually large per capita wealth. Incidentally, Delaware, which is combined in a United States internal revenue district, with Maryland and the District of Columbia, including the cities of Baltimore and Washington, is said to contribute more than either Maryland or the District of Columbia in the matter of income tax paid the government.

Half the State's Population

Wilmington has practically half the population of the State, a police census taken in the city in April, 1916, showing a total of 106,374. Outside of Wilmington the gain has been slow, but the city is growing rapidly, showing a gain of 18,963 over the Government census of 1910. However, while the State, outside of Wilmington, has practically stood still for some time in the matter of inhabitants, it has grown rich in business, due chiefly to agricultural development and the fact that the great market of the East is so close at hand.

In Delaware there are 412 dealers, and it is estimated that there are 350 garages and 275 repairshops, with probably half as many more in the territory outside of Delaware.

During 1916 approximately 2450 cars were sold in Delaware, the total registration for the year being 7102, as compared with 4657 during the preceding year and 3050 in 1914, showing a gain of 1607 in 1915 and 2445 in 1916.

It is estimated that from 3500 to 4000 cars will be sold in Delaware this year, and half as many more in the territory outside of Delaware. Incidentally, this whole area profits by the Wilmington show on account of Wilmington being the business center.

Period of Prosperity

The entire peninsula enjoyed a period of unusual prosperity last year, that of Wilmington, however, being far in advance of the rural section. In the city the bank clearings for the year aggregated $156,985,973.06, as compared with $107,730,062 during the year 1915. While the clearings in the territory outside the city are not obtainable, the aggregate, it is believed, will foot up half of that in the city for 1915, with a gain of probably 10 per cent for the past year. In Delaware, with a population of 200,000 and upwards of 7000 cars, there is, on an average, one car for every 30 persons.

The past year has been the best, from a manufacturer's and merchant's standpoint, that the peninsula ever knew, and, while the crops were not quite as large as in the preceding year, there was not much difference and prices were better, benefiting the farmer more than ever.

In Wilmington the munitions industry is the largest and most productive, employing about 20,000 men, boys, women and girls; next comes leather, with 17 factories, some among the largest in the country; steel steamships and railroad and street cars; machine tools; large repair and construction shops of the Pennsylvania Railroad; large textile and fiber mills, etc., a total of 280 establishments, manufacturing 400 lines of goods.

The capital employed aggregates between $100,000,000 and $110,000,000. Last year the payroll amounted to about $20,000,000, $2,000,000 more than during the preceding year. Manufactured goods shipped from the city were valued at $71,000,000.

The crops in Delaware last year, though a trifle smaller than in 1915, amounted in money value to $13,101,200, as compared with $9,157,680 during the preceding year. In New Castle County, in which Wilmington is situated, the aggregate last year was $3,250,000, $250,000 more than in 1915. The whole territory outside of Wilmington, including the Maryland and Virginia counties, it is estimated, raised crops valued at $25,000,000, most of which have been sold. Surveys made by Delaware College and the Federal Government in rural New Castle County showed that the money invested in agriculture earned from 5 to 9 per cent, according to crops; in Kent and Sussex counties, Delaware, 7 to 9 per cent in the heavy berry sections, with a general average in those two counties of 5 to 6 per cent. For the whole peninsula, it is figured, agriculture has averaged 6 per cent on the investment for the past year, which is unusually good.

Incidentally, many farmers are now using motor cars as a means of facilitating their farm work, the development of this rural industry in the past two years being more noticeable than ever before. Farmers appear to have more money now than for some time past and the rural trade in cars is likely to be better this year than usual.

Few Business Failures

As an evidence of the prosperity of the peninsula, according to Dun's annual statement, issued on Dec. 30, 1916, the total number of business failures on the peninsula last year was 58, as compared with 83 during the preceding year. Last year the liabilities aggregated $485,708.33, as compared with $1,178,532.86 during the preceding year. Last year the total value of building operations in Wilmington was $2,788,028.06, as compared with $1,524,852.05 for the preceding year.

Wages have increased to such an extent in Wilmington that the motor car is now within the reach of nearly everybody, and many mechanics own them, with prospects for a larger percentage of such owners this year. However, this has by no means become epidemic and a great deal of missionary work will have to be done before the mechanic as a class can feel that it is his legitimate right to own a car.

Lots of small merchants are car owners, and a large number of the dwellings now going up here are built with garages on the premises, while some old houses have been remodeled so as to accommodate the car in the cellar, with an entrance from the street. In fact, the business has grown so rapidly here that the garage owners have not kept pace with it, and garage space is at a premium.

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The twenty-third in a series showing

Dealers Who Have Made Good

MAJOR HARMON D. RYUS, president of the Oldsmobile Co. of California, and the Ryus Motor Co., was born in Osage, Kan., Jan. 2, 1872.

While at the University of Missouri Ryus was twice selected as quarterback on the All-Western football eleven by Walter Camp. After graduation he became instructor at the Lexington Military Academy, Lexington, Ky.

At the outbreak of the Spanish-American War he was commissioned in the volunteers, commanding Company F, Third Missouri Infantry.

After being mustered out of the service in 1900, he went to the Pacific Coast and his first connection with the automobile industry was when he was appointed receiver for the Auto Repository which operated a huge electric tally-ho in Los Angeles.

A year later he became manager of the White branch there and at the end of another year was appointed western representative of the White company, and it was while in this position that he drove the first automobile into British Columbia.

Ryus built the first garage in San Francisco, at the corner of Franklin and Market Streets. When he put up his sign he was joshed about his spelling some believing he had tried to spell garbage and others carriage.

Ryus introduced the first "jitney" in San Francisco. He made a small fortune driving passengers from the old Palace Hotel to the ferry at $5 a trip. He sold John D. Spreckels his first automobile and a few days later made his debut as a race driver, winning a number of short events on the old Del Monte track. A week later he won a five-mile race on the Ingleside track, defeating Barney Oldfield for the first time in his career.

Late in 1903 Major Ryus sold his interests in San Francisco, went to Los Angeles and built a garage at 4th and Broadway, across the street from the now famous Broadway Department Store.

In 1906 he won fame as a victor of the famous Mount Baldy races over the 103-mile course. In 1907 he won the first Phoenix road race and established the first San Francisco to Los Angeles record of 17 hr. and 17 min. This record stood until 1910.

In 1908 Ryus purchased an interest in the Reo and Apperson sales organization at Los Angeles, selling out a year later to become manager of the Oldsmobile factory branch in that city.

In 1915 he organized the Oldsmobile Co. of California which bought out the factory branches and acquired the Pacific Coast distribution, being elected president and general manager of the organization. Again Ryus took up his residence in San Francisco where he pioneered the automobile industry many years ago, managing the Oldsmobile on the Coast, operating three houses himself.

Last February Ryus extended his operations, buying the Chevrolet agency in Los Angeles County, which is now the Ryus Motor Co.



Major H. D. Ryus

San Francisco

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Special Bodies for Saxon Boom Sales

Lancaster Dealer, Charles E. Schutte, Becomes Body Builder

A line of special bodies for Saxon cars is being marketed by the Penn Auto Co., Saxon distributer in Lancaster, Pa., Charles E. Schutte, proprietor. There are open and closed speedster types for both the four- and six-cylinder models, a delivery body for the four and special equipment for the standard car. The bodies were first produced for local trade and were designed to stimulate sales. Schutte's efforts in this direction were so successful that he will supply other Saxon dealers.

The No. 1 open type body, unupholstered and without extra equipment, has bucket seats and is for the six-cylinder chassis. Price, $125. The No. 7 body is a streamline runabout model for the six chassis. It is unupholstered and unequipped. The No. 4 body is for the four-cylinder chassis and has open bucket seats. It is upholstered but has no extra equipment. Price, $85. The No. 6 body is upholstered but is unequipped. It is a streamline roadster design for the four-cylinder. Price, $125. No. 8A is a delivery body for the four-cylinder chassis. Price, $100. No. 8B is also a delivery body selling for $80. All bodies are finished in black.

Special equipment for Nos. 1 and 7 is listed as follows:

High grade imitation leather, first grade hair, $15; genuine leather, $22; tire carrier for one wheel, $22; two wheels, $14; spring cushions, $5; khaki rain cover, $81.50; lamp irons, $5; step at side, $2; set at rear, $4; special trunk with side rails, $15. Special equipment for Nos. 4 and 6: Genuine leather, $22; spring cushions, $5; khaki rain cover, $8.50; wire wheels with demountable rims, $35 single or double tire carrier, $8; lamp irons, $5; collapsible top, $25.

If desired, the bodies will be scraped and painted, sufficient color being shipped so that the chassis may be finished by the dealer. Ten photographs showing all the different styles are sold for $7.50 in case the dealer desires to have these bodies manufactured locally.

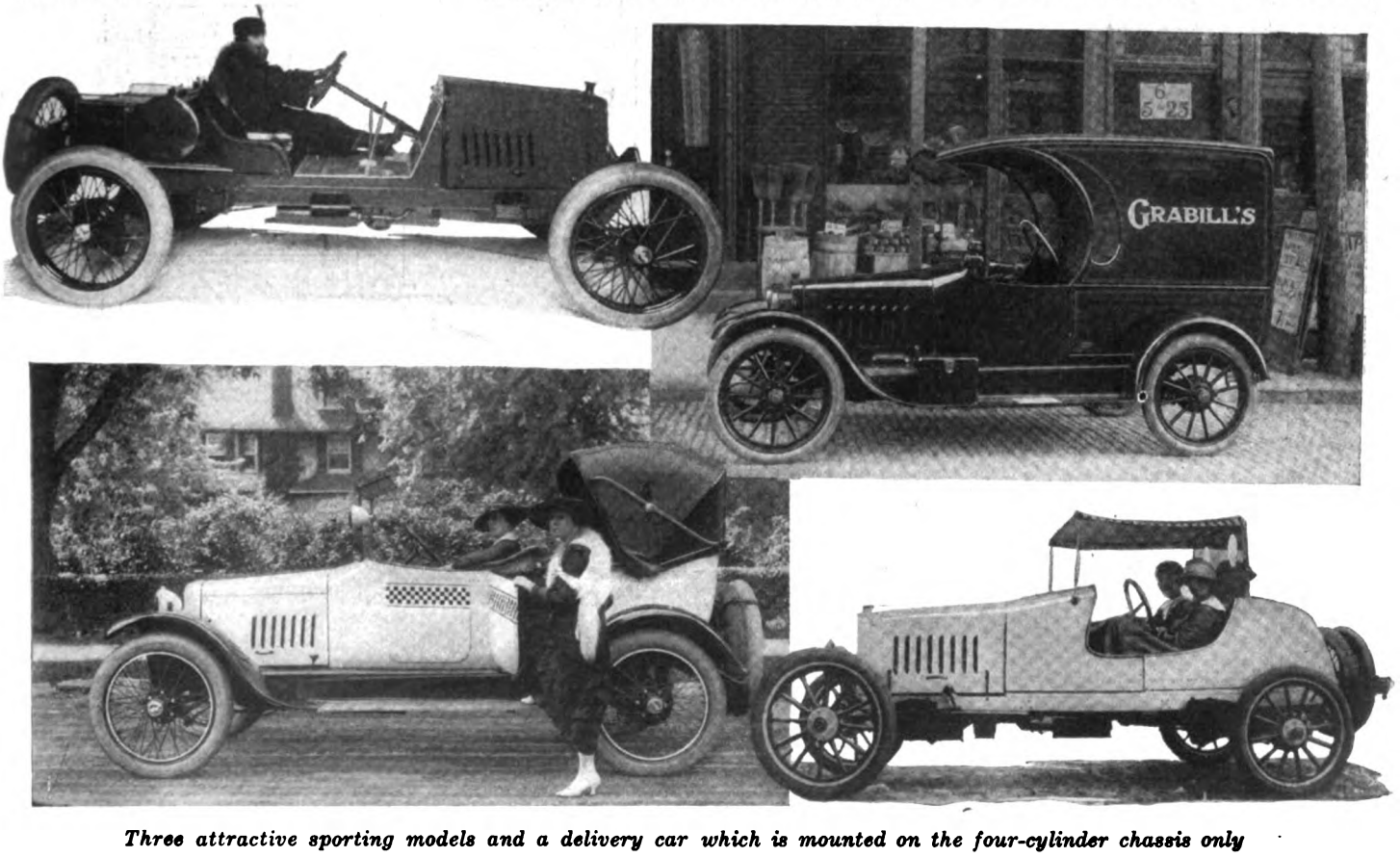
Inasmuch as Saxon cars must be bought complete with bodies, the question of how to dispose of these bodies at a profit arises. Schutte's experience is that it is best to stock these bodies and sell them to owners who have had accidents with their cars or to sell the parts piecemeal to people desiring new fenders, tops, windshields, etc.

The delivery body which is only mounted on the four-cylinder chassis has a Crown top, double plate glass doors in the rear, a removable seat next to the driver. The body is attached by sawing the door sill through at the center and taking off the runabout body. A steel plate is fitted across the sill end of the door and two large thumb screws hold the body in place. All that is necessary to remove the body is to loosen the thumb screws.

Lots of Room at Minneapolis Show

MINNEAPOLIS, Feb. 5—There should be plenty of room for visitors at the Minneapolis show, which runs from Feb. 3 to Feb. 10. Ten rooms of the new Mazda lamp factory, Central Avenue and Broadway, have been secured, each room containing 12,000 ft. of floor. Cars and accessories will be arranged along the sides of the wide rooms, leaving plenty of space at the center for broad aisles.

Previous shows in Minneapolis and other cities, and notably this year on the upper floors at New York, have been crowded to the point of inefficiency, it being almost impossible for a visitor to see the show with any degree of comfort. This bad feature is eliminated by the size of the building used this year here.



Three attractive sporting models and a delivery car which is mounted on the four-cylinder chassis only

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Church Fuel Feed Improved by Water Trap

New Device Removes Moisture from Exploded Gases—Automatically Emptied—Non-Freezable

Several improvements have been made in the Church fuel feed system, the most important of which is the addition of the automatic discharge water trap. Since the fuel is lifted by pressure taken directly from the combustion chamber the presence of water in the pressure line is to be expected because it is one of the products of combustion, but it must be caught before it reaches the fuel tank. The trap is automatically emptied by a float which controls a needle valve. When a certain amount of water has collected the float lifts and the water is discharged. To prevent freezing of the water in winter, which would stop the action of the trap, it is attached to the exhaust pipe.

The pressure release valve is combined with the trap assembly and the warmth is beneficial to this also, as it prevents the accumulation of gummy oil, as might happen with an over-lubricated engine. The water valve is shown at the bottom and the pressure release valve at the top of the section.

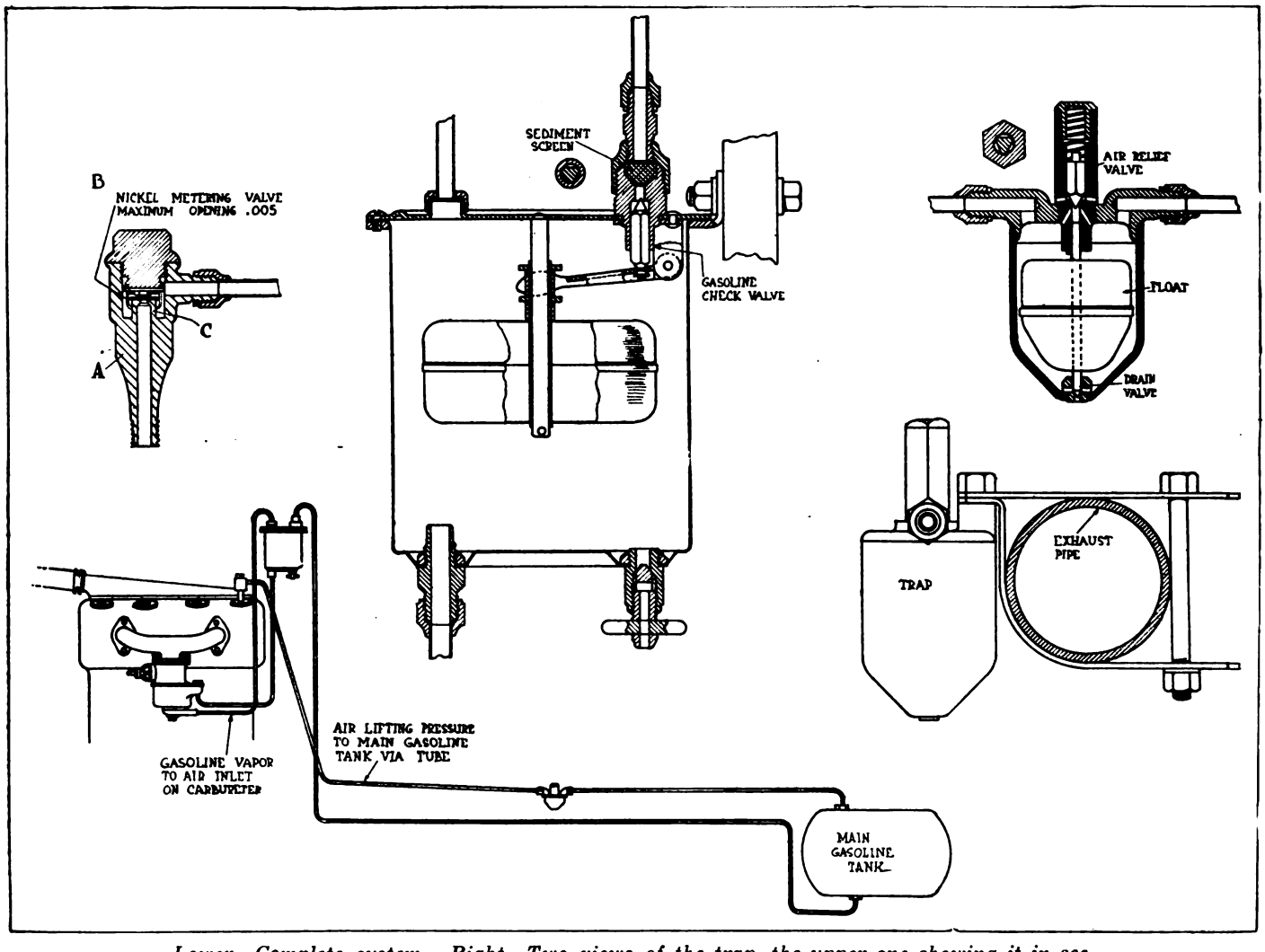
Fuel enters the supplementary tank at the top and the supply is cut off when the float rises enough to close the valve in the cover. To allow gravity feed there must be an opening at the top to admit the atmosphere. The escape of gasoline vapor through this hole is prevented by connecting it to a copper pipe that is carried down to the air intake side of the carbureter.

The pressure valve is extremely simple. The body A is bored out at the top so that there is left an upstanding piece C, like the cut off end of a tube. On top of this rests a nickel steel disk B, kept in place by the little cage that is shown surrounding it. With the explosion and the compression strokes the valve lifts a maximum distance of 0.005 in., allowing some gas to pass into the pressure line, the release valve on the side of the exhaust pipe being set to blow off at about 1½ lb. per square inch.

The feed is, of course, not affected by throttle position. As long as the engine is running there is a more than adequate supply of pressure, and the gravity tank contains more than sufficient for starting up. It is essentially an exhaust pressure system with all the drawbacks removed. It is simpler than the air pressure system that calls for a pump on the engine, and it is claimed that it can be made smaller and lighter than an equally efficient system that depends upon depression in the inlet pipe for the supply of power to lift the fuel. The system is made by The Automatic Carbureter Co., Chicago.

Lights on All Vehicles in Ohio

CLEVELAND, Feb. 6—The Terrill Bill, requiring lights on all vehicles, both horse and motor propelled, has passed the State Senate at Columbus and is now pending in the House. The bill was drafted by the Ohio State Automobile Association. It was introduced by Senator Virgil Terrill of Cleveland.



Lower—Complete system. Right—Two views of the trap, the upper one showing it in section and the lower indicating how it is mounted on the exhaust pipe to prevent freezing. Upper, center—Section through float tank, mounted near the engine. Upper, left—Metering valve which allows a small amount of gas to pass from the combustion chamber into the line during each explosion

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Separate Sales Body For Pullman Company

New Company Controlled by Men in the Old and Will Sell the Entire Ontput

YORK, PA., Feb. 6—The Pullman Motor Car Corp. has been formed in Delaware with a capital of $250,000 to market the output of the Pullman Motor Car Co. The latter will continue to manufacture Pullman cars.

The stock of the new corporation is held by the same interests that control the Pullman Motor Car Co. and the purpose of the selling organization is to assume all of the guarantees and financial obligations connected with the sale of the Pullman product. Existing contracts with all Pullman dealers continue as heretofore, and the new corporation will maintain all of the guarantees on all Pullman cars sold in the past as well as in the future.

During the past year the business of the Pullman Motor Car Co. approximated $4,000,000, which was done on a capital of $500,000, which was quite inadequate for such a total of business. Plans are under way for an increase of capital to provide sufficient working funds and for an increase in factory facilities.

With the resignation of H. W. Hayden, vice-president and general manager, the internal organization of the manufacturing company has been reorganized under a committee system of department heads. The sales and purchasing departments are under the general supervision of A. R. Cosgrove, formerly sales manager; financial department under H. P. John, former secretary and treasurer and a stock holder; and service and stock under S. L. Fuller, formerly service manager.

Increased finances will be controlled by the present stockholders, who are largely business men of York and eastern Pennsylvania. J. C. Smith, formerly chairman of the board of directors, is president of the Smith Ault Reaper Co. and a director in many public utilities in eastern Pennsylvania. George H. Schmidt, his brother, is a corporation lawyer. Carlton Hoff is production manager of the American Chain Co. W. A. Keyworth is president of the First National Bank, York. J. E. Baker is a large coal and limestone operator. The company will bring out in a few weeks a new six-cylinder model at very low price to be built in quantities.

END OF MONKEY WRENCH MAN

(*Continued from page 9.*)

were delivered in 4 days and he insisted that intelligent sales work of this kind was essential in the days that are to come.

Hugh Chalmers said not one of us is anywhere near our 100 per cent efficiency for opportunity. Cars, he said, are still being bought rather than sold and dealers are not combing the territories finely enough. Territory, he said, is not States and counties—it is people, humans. And the dealer must organize his business to get the most out of his territory. He might rather have a small territory and many dealers than a big territory and fewer dealers. Intensive selling means more money for the dealer.

A man, Chalmers stated, may think himself busy when he is buried in details that could just as well be done by a clerk. He is busy, but is busy with the end of his business that is NOT BRINGING IN THE PROFIT. The SALES end is the profit end.

And don't be so sudden to take No for an answer, he added. Any prospect is likely to say No, but the salesman's job is changing the No into a Yes.

He also made a plea to Americans not to lose their heads in the present critical days, and he also showed the feeling that exists among manufacturers when he attacked the New York Tribune for its recent somewhat hazy and unjustified criticism of the Overland.

Get Your Business in Shape

John N. Willys, at the Overland dinner, took a few minutes out of the evening of merriment to reiterate: "Get your business in shape." He pointed out what the future held and urged the dealers to get all set for the future.

And all the way through this idea has kept cropping out. The manufacturer is after Better Dealers. And he seems to be doing it in two ways:

1—He is trying to make his present dealers better.

2—He is scanning the field for successors to those who decline to join the onward march toward Better Business and real merchandising.

If this were happening with one or two manufacturers only—as was the case a year and two years ago—it would not mean so much. But it is happening everywhere. The top of the industry, so long asleep to its duty and its possibilities, has waked up. It has seen the blacksmithshops and hovels in which the "pride of the factories" has been sold. It has realized that this Shame of the Industry cannot longer remain. It is pushing it away.

Twelve Thousand at Chicago Salon

CHICAGO, Feb. 3—Good business was done at the second motor car Salon held in the Elizabethan room of the Congress Hotel all of last week. The attendance increased 500 per cent over that of last year. Approximately 12,000 persons attended during the week. The charge of $1 admission was made to keep out the crowd of visitors who would not be likely to purchase a high priced car. The results of the past two salons have been so satisfactory that a contract has been placed and a deposit made for the use of the Elizabethan room in 1918. It is hoped by that time to increase the floor space. Practically all the space at present available has been contracted for.

Unlimited Capital Will Back New Chain System

Kansas City Store to Be Hub of Huge Accessory Sales Organization—$1,000,000 Ready Now

NEW YORK, Feb. 7—A chain system of accessory stores to extend from coast to coast has been started with the financial backing of one of the biggest steel men in the country. One million dollars has already been placed at the disposal of this venture, and the project will be pushed with unlimited capital until there is a chain accessory store in every large town or city in the United States.

The Equipment Co. Kansas City, Mo., will be the hub of this new venture, according to good authority. The plan of the men involved in this expansion is to buy or control several established accessory businesses and put them in first class condition. After a number of independent units have been bought and standardized, others will be added to the group; and eventually a chain name will be adopted.

Talk of such a system has been in the air for a number of months, and various men in the motor world have been attempting to run down the rumor. Because the backers of the plan are not anxious for it to have much publicity until the original units are fully developed they are not willing to have their names given. The information, however, is from a reliable source, and it is believed that the sponsors of the movement will make themselves known in a short time.

The theory of the men who are inaugurating this step is that standardized selling will pay as well as standardized manufacture of parts and cars. They wish to build up a high grade organization whose name will stand for excellence. They believe that the standard selling plan has proved successful in the restaurant, drug, dry-goods, and groceries, and that the same methods, therefore, will prove profitable in the accessory line.

The probabilities are that the expansion will not be hasty. The present attitude of the men behind the project shows that they prefer to build slowly and develop strong units rather than to spread too rapidly on an insecure basis.

Acme Truck Prices Advance

CADILLAC, MICH., Feb. 6—Prices of Acme trucks produced by the Cadillac Auto Truck Co. have been advanced, effective Feb. 15. The new prices are: 1-ton, $1,575 instead of $1,500; 2-ton, $2,200, instead of $2,100; 3½-ton, $3,000 instead of $2,900. All orders booked prior to February 15 with deposits will be subject to the old prices.

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Salesmen *Can Go* To College

THE University of Illinois will conduct each year a Short Course in Salesmanship and Business Administration. The course just finished took up these subjects:

1—Good buying methods
2—Good selling methods
3—Correct accounting
4—Extending credit
5—Advertised goods
6—SALESMANSHIP

The course is free; it lasts 4 days

THE dealer and garageman can now go to college.

The college is not a school in a city office building, but a big university which is attended by rah-rah boys, and which has its big football teams and athletes.

And here the dealer and garageman may learn, not Latin and Greek, but business. He may learn how to advertise, how to sell, how to run a store, how to get and keep customers.

Nor does this require so much time and money that it interferes with business, for the course is but four days a year and the cost is nothing.

The course is what is known as the University Extension Course, and one such was held last week by the University of Illinois, in Urbana, Ill. It was attended by 250 students—gray-haired business men, youths just starting, salemen in from the road and business workers of all kinds.

The teachers included business men who gave from the wealth of their experience. It was a wonderful opportunity for the small retailer to draw from the store of experience of successful men who are authorities on the many phases of the business of the dealer, garageman, repairman, accessory man and salesman.

The College of Commerce and Business Administration of the University of Illinois gave the course and any one could come—little store keeper, big store keeper, or clerk—with no questions asked, and no charge. About 250 did come from Illinois, Missouri and Indiana and for four days sat in the classrooms and listened to twenty-four lectures.

The Case of Smith

Suppose Smith, who runs a small cross-roads repairshop up in Eben, Ill., decides that he will start selling accessories. Smith is the typical garage and repair man, having barely finished grammar school because he had to get out and dig, and who has made a small measure of success by hard work.

He realizes that selling accessories is more than just buying anything that comes along, putting it onto his shelf, and waiting for someone to come along and ask for it. But in his home town he can get little help, and when he starts selling accessories he may go on in a hand-to-mouth existence because he has no time to go to a business college, and might not get what he wanted if he did. But if he had taken four days off and gone to the Illinois course, he would have learned that it is best to:

What Is Best To Do

1—Buy in small quantities instead of letting himself be loaded up by a salesman.
2—Discount bills, instead of paying this extra cost for being late.
3—Sell at one price, instead of selling at half price to one man, and list to another.
4—Know his profits, instead of running on a guess-work schedule.
5—Sell advertised goods, as they give a quicker turnover.
6—Extend credit carefully, and demand notes on a running account. The banker is supposed to carry the community credit, and the dealer should not try to take his job.
7—Receive returned goods without question, and give the money back. The dealer is selling satisfaction alone.

Here are some of the men that talked to the merchants: Clifton C. Field, buyer for the Kepler Co., Eau Claire, Wis., formerly associated with several large eastern department stores. He told about retail buying and selling, and his talks were practical.

Chain stores, mailing lists and mail order competition were discussed by Edward B. Moon, director of the Department of Community Development and Trade Betterment, Farmers' Review.

Chas. E. Spillard, a merchant of Elgin, Ill., told how he manages a sales force, and James W. Fisk, manager of the Retail Service and business System Department, Associated Advertising Clubs, Indianapolis, talked about the dollars and cents value of training clerks.

Dealer law and accounting were covered by the instructors of the college, and any points not covered in the lectures were thoroughly discussed by the merchants themselves at the close of the talk. The meat of the lectures and discussions may be summed up as follows:

When Buying

IN buying, select the goods to meet the requirements of your trade, and buy in small quantities. For example, if the majority of your patrons own Fords, it would be unwise to stock up with Packard headlights—and just as unwise to load up with more Ford headlights than you could immediately sell.

Buying in small quantities lowers the amount of money invested and keeps it working faster to bring new goods from the jobber to your shelves.

Quicker turnover, they call this in college, and profits come from turnover.

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The Old Storekeeper

The old type storekeeper is exactly what the name implies—one who buys a mass of goods, piles it on his shelves, and lets it eat the profits by lying on the shelves, and by depreciation. Profit lies in buying the items that you can sell immediately at list price.

Small quantity buying permits the use of smaller storage space, more effective display, and simpler accounting. In this connection the jobber serves a most important part, as it is only from the jobber that the dealer can buy in small quantities, and as necessary.

Can The Credit, Boys

Another fault of the small merchant is his belief in the necessity of carrying the customer on credit, because of fear of losing trade. The merchant should not be the banker in his community, and that is what he is trying to do when he extends credit.

The remedy is cash business, or adapting the policy demanding a note on running accounts.

Several cases were cited where the merchant had enough backbone to change to a cash basis, his success was immediate. A slight loss was noted at the start, but a cash basis is the right basis, and the customer soon realized that it was to his benefit.

By the cash basis, the merchant can discount his bills. This alone has changed a losing business into a profitable one.

One Price

SELL at one price. No business can survive that does not have the confidence of its customers. This confidence is the direct result of satisfaction—satisfaction that the goods represent the value of the money paid.

A two-price system destroys confidence, both that of the one purchasing at the limit price, and that of the favored one, for they eventually get together and exchange views. The one price store does business on a square basis, sells service and satisfaction—and survives.

Hand-to-Mouth Existence

The day of the hand-to-mouth existence of the merchant has passed. To-day the dealer must know his profits. This means accounting—not bookkeeping—accounting. Bookkeeping is record keeping—a grave yard of past mistakes, instead of a sign board to future conduct. The latter is accounting, whereby some conclusions are drawn from the figures obtained by bookkeeping, and then intelligently used.

This is best done by keeping each stock separately, knowing what each item costs, how much it costs to get it onto the shelf, to display it, to advertise it, to sell and finally to deliver it. By figuring each one of these as a per cent of the selling price, and tabulating the results by the month, the season, or the year, a comparison may be drawn that shows which items are bringing a profit, and which a loss—and, more important—exactly where the loss occurs.

Three steps are then open, one, to remove the cause of the loss, another to discontinue the item, and third, if the item be a leader, to continue it with caution. But know your profits.

Advertised Goods

THE small merchant is often loathe to handle advertised goods, because the profits are somewhat lower than those of unadvertised goods.

This is poor business, as advertised goods sell easier and give a quicker turnover. With advertised goods the merchant does not have to go through all the steps of making a sale—namely, attracting attention, arousing interest, creating a desire, and getting the money. This has all been done—or at least started—by the advertisements, and the merchant merely has to take the last step—get the money.

Advertised goods serve to give the customer confidence in the store, satisfaction that the goods are worth the price.

Banker and Merchant

THE relation between the banker and merchant was also discussed. The purpose of the banker is to keep the wealth in the community working, and producing for the good of the community. Many merchants regard the banker as their enemy—whereas he should be regarded as their friend, and the merchant should feel free to go to him for business advice. But when going to the banker, go to him as you would go to a physician—a business physician—tell him all your symptoms and he will help you.

Avoid Being an "Order Taker"

How to sell goods and avoid being an order taker that carries an item from the shelf at the prospect's request, lays it on the counter, and collects the cash, was covered.

This is done by approaching the customer courteously, asking his wishes, and gaging the quality of the item to be shown by your impression of his appearance. Then watch the manner in which the item is received—get it into the customer's hands—get him to touch it, feel it, or if it is an automobile, get him back of the wheel. Talk quality, quality, and answer the questions you yourself would ask were you buying the same thing.

Handle the item as if you yourself considered it valuable, and when the sale is completed, do not drop your interest in the customer with the receipt of the cash. Remember you are selling satisfaction, and your every effort should be to impress the idea of satisfaction in the customer's mind.

Think!

THESE are a few of the things discussed. All served to make the merchant think for himself—to know that others were meeting the same problems that he had to face in his little store—and more important—to learn how someone else had solved the problem.

In one respect only, could the method of handling the course be criticized—concrete examples of good and bad practice were not given. For example, the store paper as an advertising medium was mentioned. If one, or two, or three of these papers, showing exactly what had been done, and how, were there to pass around the point would have been driven home.

Samples Would Have Helped

Perhaps samples might have been distributed to each of the merchants, so that they could take them home to be used as models.

Circular letters, both for bringing in trade, and for collecting bills were mentioned. Concrete examples of these might have helped.

Different methods of writing advertisements were discussed—those that feature price, those that feature quality, those that try to sell the goods, and those that build up good will. Concrete examples of these could have been distributed, pulled the question out of the air, and the question "How?" instead of "What?" answered once and for all—with little loss of time.

Mulford to Be with Hudson

DETROIT, Jan. 27—Despite many reports to the contrary, Ralph Mulford will be the star driver for the Hudson racing team this coming season. Mulford did consider the purchase of a Peugeot car and expected to race it himself, but has reconsidered and will continue with the Hudson Company, and will retain his berth on the engineering staff of that company.

Pearne Heads Washington Dealers

SEATTLE, Jan. 23—W. Pearne was chosen president of the Washington Motor Trades Association at the annual meeting. W. E. Ferris, retiring president, was named vice-president, and A. J. Temme, treasurer. G. R. Sumpter was named secretary. New directors include S. C. Renner, George Hoffman, J. H. Dickinson, W. E. Ferris, A. J. Temme and Hugo Graf.

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Prominent Tradesmen Assume New Duties

Resignations and Promotions Place Workers in New Places

H. W. Hayden has severed connections with the Pullman Motor Car Co., York, Pa., and is about to enter into another manufacturing business. He was formerly general manager.

Homer C. Rice has been appointed sales manager of the Walter W. Longstreth Co., Haverford, Pa. This firm handles the Ford, Chandler and Hupmobile.

Mark Manship has succeeded Leroy G. Peed as manager of the Philadelphia branch of the Maxwell Motor Car Co.

Fred A. Snow, for five years chief metallurgist of the Thomas B. Jeffery Co., Kenosha, Wis., and its successor, the Nash Motors Co., has resigned to engage in business on his own account as a consulting metallurgist and to establish a commercial heat-treating plant in Chicago.

H. L. McClaren, former president of the Mitchell-Lewis Motor Co., Racine, Wis., has been elected president of the Racine Rubber Co. to succeed Stuart Webster, who resigned because of ill health.

William Regan, superintendent of the enameling department of the Kissel Motor Car Co., Hartford, Wis., has resigned to accept the position of superintendent of the same department of the Stephens Motor branch of the Moline Plow Co.

George G. Weidner, for the past 3 years manager of the Stewart-Warner Speedometer Corp.'s Philadelphia branch, has resigned to become associated with the Benford Mfg. Co, Mt. Vernon, N. Y.

Robert C. Enos has resigned his position with the American Distributing Co., to become sales manager of the Torbenson Axle Co., Cleveland, and will be located at the home office. He will assume his duties at once.

John A. White, who has been connected with the U. S. Lighting & Heating Co. for the past 8 years, has been promoted from manager of Chicago office to salesmanager and will assume his new duties at once. He will be located at the home office, Niagara Falls, N. Y.

E. R. Hollender will manage the New York salesroom of the Jennings Motor Sales Co., which has recently closed for the agency for Hal cars for New York.

L. E. Renney, formerly a member of J. W. Leavitt & Co., Overland distributer on the Pacific Coast until July of this year, is now handling the Buick in San Joaquin and Calaveras Counties, Cal., with headquarters in Stockton.

E. G. Scott, formerly with Kissel Motor Car Co. and Packard Motor Car Co., started Jan. 1 with the Kentucky Wagon Mfg. Co., Louisville, Ky., and will demonstrate the Old Hickory truck to the Ohio trade.

Henry Lansdale has been made manager of the carriage sales department and Frank C. Kip has been appointed manager of a new department of carriage sales promotion of the Packard Motor Car Co. Lansdale was formerly vice-president and general manager of the Denby Motor Truck Co. Kip was formerly associated with Motor List.

A. A. Crumley has joined the Chalmers Motor Co. as district manager.

James T. Shaw, who was formerly the treasurer of the General Motors Co., has purchased stock in the Automobile Crank Shaft Corp. and has been made the treasurer of that concern. J. M. Hibbard, who was formerly the treasurer, will continue to act as general manager.

Osgood Lens Tested by A. A. A.

CHICAGO, Feb. 5—The Osgood lens, manufactured by the Osgood Lens & Supply Co., Chicago, controls the light from headlamps. This was demonstrated in a series of tests made on the Chicago speedway recently and supervised by the Contest Board of the American Automobile Association. A Hudson car equipped with regular lamps made by the C. M. Hall Lamp Co. was used, the light being projected on a screen 7 ft. high and 65 ft. long. At 50 ft. and 75 ft. distance, the light beams cut the screen 25 in. from the roadway and were horizontally diffused 15 feet and 18 ft. respectively. At 150 ft. the light cut the screen 24 in. from the roadway and was diffused horizontally 35½ ft. At 250 ft. the height at which the light beams struck the screen was indeterminate, though the horizontal diffusion was 60 ft. A test to determine the total carrying power of the lenses shows the light capable of casting a shadow at 1800 ft.

Not the Benford Plug

NEW YORK, Feb. 3—In the Dec. 27 issue of Motor World the spark plug produced by the L. F. Benton Co., Vergennes, Vt., was inadvertently styled The Golden Giant. The Benton Company produces the Benton spark plug.



This is C. H. Davis of the Woods-Premier Co., Denver, tied up so that he can use but one hand in demonstrating the Premier with its electric gear shift. He is no ground hog in winter; but boosts winter business by driving in this way for 6 hours at a time in zero weather.

Drives Six Hours With But One Hand on Wheel

Woods-Premier Dealer Surprises Denver With Unique Stunt in Icy Weather; Uses All Shifts

DENVER, Feb. 3—A unique demonstration of winter motoring easily done was a feat of driving a car with one hand for 6 hr. continuously through the business section of Denver one afternoon this week by C. H. Davis, secretary of the Woods-Premier Motor Co., Premier distributor for Colorado, Wyoming and New Mexico. The one-hand drive was made from 2 to 8 o'clock, during heavy traffic, and attracted extra attention because the streets were icy and the temperature ranging from 8 deg. above zero to a few deg. below. Stops were made to pick up or let out prospective buyers, and the gears were shifted into all speeds.

To give the test an official angle, Secretary-treasurer Charles F. Roehrig, of the Denver Motor Club, firmly tied Mr. Davis' left hand to his body where he could not use it in any way to help handle the car. Manager L. G. Johnson, of the Quick Service Tire Co., rode throughout the test as a witness. Before getting permission from the city authorities to make what they considered a dangerous test, Davis took Traffic Sergeant Robert W. Thompson on a sufficient spin to convince him that the car could be driven in this way without endangering traffic.

Third Building for Boston Show

BOSTON, Jan. 27—Boston's motor show is swelling up to gigantic proportions and now it has been found necessary to add a third building. The main show will be in Mechanics' Building, the usual place. There will be the Salon at the Copley Plaza for cars of $2,500 and upward, and the overflow will be held at Horticultural Hall further along Huntington avenue, where there was an overflow a few years ago.

Weart Heads Bound Brook

CHICAGO, Feb. 3—Spencer Weart has been elected president of the Bound Brook Oilless Bearing Co. of Bound Brook, N. J. He was formerly vice-president and secretary of the company. George Smalley is now vice-president, director and general manager. He was formerly second vice-president. W. F. Jennings is eastern sales manager, and H. J. Lindsey western sales manager with offices in Detroit. A. K. Smith is production manager. The office of secretary and second vice-president has been abolished.

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Medium-priced Fiat on The Market After War

Poughkeepsie, N. Y. Factory Will Enlarge Its Present Plant 10 Times When War is Over

NEW YORK, Feb. 3—The F. I. A. T. Co., Poughkeepsie, N. Y., will invade the medium-priced field as soon as peace is declared, according to J. S. Josephs, of the American company, who arrived here Feb. 1 after a trip to the factory of the parent Fiat company in Turin. As soon as the war is over, the Fiat company will enlarge its Poughkeepsie plant to nearly ten times its present size, and will produce on a large scale a car selling for about $2,000. The arrangements for building a medium-priced car will not mean the discontinuing of the higher-priced models. The Italian company recently acquired control of the American factory, buying all of the stock of the Poughkeepsie factory except that held by Josephs.

The Italian factory has been enormously increased since the outbreak of hostilities and now employs 17,000 men and is turning out 2000 vehicles a month. It also has a monthly output of sixty aeroplanes. On two occasions the capital of the parent company has been increased until it now stands at 29.750,000 lira or, roughly, $5,900,000. A new four-story factory is now being constructed.

Simplex to Have Small Four

NEW BRUNSWICK, N. J., Feb. 3—The Simplex Automobile Co. is working on a new four-cylinder town car, which will be brought out some time next winter. It will have a block L-head, 4 x 5-in. motor, the chassis selling for $4,000. The wheelbase will be 125 in. Capacity of the plant is now 500 of the sixes a year. The company expects to build about 600 of the fours a year.

E. Blaine Bikle Passes Away

WILLIAMSPORT, PA., Jan. 28—E. Blaine Bikle, assistant secretary-treasurer and office manager of the Lycoming Foundry & Machine Co., died today. His successor will be appointed at the next meeting of the board of directors.

Four Wheel Doubles Capital

CLINTONVILLE, WIS., Feb. 5—The Four Wheel Drive Auto Co. declared a 100 per cent stock dividend at its annual meeting, increasing the capitalization from $500,000 to $1,000,000. At the same time a cash dividend of 15 per cent was paid.

Blue Ribbon Body Expands

BRIDGEPORT, CONN., Feb. 5—The Blue Ribbon Auto & Carriage Co. has been taken over by a new company styled Blue Ribbon Body Co., the latter being composed of the same men in the former. The new company has an increased capitalization, a new organization and increased facilities. E. A. Godfrey, president, and Geo. H. Woods, secretary and treasurer of the old company, will hold similar positions in the new company. Additional land has been purchased and new buildings will be erected. The company makes motor car bodies exclusively.

Kelly-Springfield Earns $2,117,314

NEW YORK, Feb. 1—The Kelly-Springfield Tire Co. in 1916 earned $2,117,314, equal to 38.9 per cent on the $4,907,200 common stock, after deducting $215,598 dividends on the preferred. This compares with $1,706,744 in 1915, or 29.67 per cent on the $4,834,600 common. Gross profit in 1916 amounted to $3,464,459, as against $2,880,080 in 1915.

Velie Prices Go Up $50 March 1

EAST MOLINE, Feb. 2—The Velie Motor Vehicle Co. will advance its prices $50 on March 1 on all its open cars, as follows: Model 28, five-passenger touring, $1,185; with detachable Sedan top, $1,385; four-passenger companionable roadster, $1,185; two-passenger roadster, $1,116. Model 27, seven-passenger six, will sell for $1,650. The closed body types are the four-passenger coupe at $1,750, the touring Sedan at $1,685, and the town car at $2,250.

Scovel Iron to Handle Jenkins Spring

ST. LOUIS, Feb. 3—The Jenkins Vulcan Spring Co. has closed a distributing contract for 2 years for the State of California with the Scovel Iron Store Co. San Francisco. The company carries in stock for immediate shipment 585 types of springs. It will declare a stock divident of 100 per cent the early part of this month. The company is negotiating for a new plant affording four times the present floor space.

Torbensen Axle to Build

CLEVELAND, Feb. 3—The Torbensen Axle Co. has let the contract for a new machine shop addition of about 30,000 sq. ft. The orders for the equipment have not yet been placed.

Federal to Add New Trucks

DETROIT, Jan. 15—The Federal Motor Truck Co. will shortly begin the manufacture of two new trucks of 1-ton and 5-ton proportions. Mechanically they will be somewhat similar editions of the present 3½-ton truck and will include the worm-drive rear axle, heavy motor with five-bearing crankshaft of nickel-chrome steel, force-feed lubrication operated at a pressure of 150 lb., feeding all bearings, including the piston wrist-pins.

Hard to Make Superfector

BUFFALO, N. Y., Jan. 10—The Hard Mfg. Co. has taken over the Willet Superfector, a device consisting of an auxiliary air valve system for attachment to the intake manifold, and expects to manufacture the superfector and market it. Heretofore the superfector has been manufactured by the Buffalo Motor Appliance Co., Buffalo, N. Y.

New Castle Adding a New Tire

NEW CASTLE, PA., Feb. 2—The New Castle Rubber Co. will bring out a new tire, to be known as the Shenango, as soon as proper machinery is installed. Manufacture of the guaranteed New Castle tire will be continued.

Standard Roller Stock May Be Sold at a Loss

Holders Urged by Committee to Dispose of Shares to New York Firm; Receivership Profits

PHILADELPHIA, Feb. 5—The stockholders' committee of the Standard Roller Bearings Corp., lessee of the Conrad patent, has submitted to the stockholders a plan for the reorganization of the company.

The committee has procured an offer from Robinson & Co., New York bankers, for the purchase of the stock at a price which will net the stockholders $7 a share. This plan is on condition that owners of not less than 90 per cent of the stock consent to sell their holdings and agree to the proposed transfer of the company's assets and property in this State prior to Feb. 27. Robinson & Co., has agreed to pay over $2,000,000 for creditors' claims and buy in the outstanding stocks.

The company's claims now amount in the aggregate, including interest, to $1,800,000. Under the plan the stockholders will be reimbursed to the extent of $600,000 for their 85,700 shares, representing $4,285,000. Robert S. Woodward, Jr., states that if this plan is not accepted the original plan of reorganization will be resorted to and the stockholders will be allowed to participate by paying an assessment which originally was fixed at $7.50 and $15 on common and preferred stock respectively.

Since Woodward and S. Lawrence Bodine were appointed receivers 3 years ago the company has earned in profits $847,000. All claims, said Woodward, would be satisfied if the company were allowed to remain under the management of a receivership.

Swendson Heads Milwaukee Dealers

MILWAUKEE, Feb. 5—E. H. Swendson, 722-724 National Avenue, Milwaukee, Ford dealer, was elected president of the Wisconsin Garage Owners' Association at the annual meeting held last week. William Bruhy was elected vice-president; H. Penner, treasurer, and Nathan M. Stein, secretary. The association hereafter will meet on the second Monday of each month and has arranged for the use of committee room A of the Auditorium for its sessions. At this time the society is working on local and state legislation, which will make possible some uniformity of prices for labor and materials used in repair work. A constructive program of activity is being outlined to improve the garage business in a general way.

Gas Up 1 Cent in Kentucky

LOUISVILLE, Feb. 1—The Standard Oil Co. of Kentucky has advanced gasoline 1 cent a gallon. Tank wagon prices are now 22 cents, and garage prices, 21 cents.

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Specifications of the Leading Cars

MOTOR WORLD GUIDE

Revisions Are Made in Table Every Week

Model	Motor	S. A. E.	Ignition	Carburetor	Starter	Clutch	Gearset	Wheelbase	Tire	Rims	2-Passenger	5-Passenger	7-Passenger	Coupe	Sedan	Limousine	Detachable Top
ABBOTT																	
6-44	6-3½x4½	25.3	Remy	Stmbg	Remy	DP	3	122	32x4	SS	1195	†1250	1195	1495	1830	....	....
ALLEN																	
Classic	4-3½x5	22.5	Wsths	Stmbg	Wsths	C	3	112	32x3½	SS	850	850	†850	1175	....	....	1195
AMERICAN-SIX																	
A	6-3 x5	21.6	G & D	Zenith	G & D	D	3	122	32x4	SS	....	1285	....	....	....	....	....
AMS-STERLING																	
17	4-3½x4½	15.6	Bosch	Stmbg	Bosch	DP	3	110	30x3½	SS	....	....	....	....	....	....	....
ANDERSON																	
Six-40	6-3½x4½	25.4	Wsths	Own	Wsths	DP	3	120	33x4	SS	1275	1250	*1250	....	....	....	....
APPERSON																	
6-17	6-3½x5	29.4	Remy	Rafld	Bijur	DP	3	130	34x4	SS	1750	....	1750	....	....	....	....
8-17	8-3½x5	31.2	Remy	Rafld	Bijur	DP	3	130	35x4½	SS	2000	....	2000	....	....	....	....
ARBENZ																	
	4-3½x5	16.9	Conn	Carter	Disco	C	3	108	30x3½	C	....	675	....	....	....	....	....
AUBURN																	
6-39	6-3½x5	23.4	Remy	Rafld	Remy	DP	3	120	34x4	SS	1145	1145	†1145	....	....	....	1320
6-44	6-3½x5½	29.4	Delco	Rafld	Delco	DP	3	131	35x4½	SS	....	†1535	1535	....	....	....	1785
AUSTIN																	
Hy-King	2-2½x5	39.7	Delco	Stmbg	Delco	D	6	142½	34x4½	SS	3750	3750	3750	4550	4950	5250	....
BIDDLE																	
D	4-3½x5½	22.5	Dixie	Zenith	G & D	DP	4	122	32x4	QD	2200	2350	†2275	....	....	3800	3900
BOUR-DAVIS																	
17	6-3½x4½	25.3	G & D	Stmbg	G & D	DP	3	118	32x4	QD	....	1250	....	....	....	....	....
BREWSTER																	
	4-4x5½	25.6	Bosch	Zenith	U. S. L.	C	3	125	34x4½	SS	†6500	....	....	....	7500	7700	....
BRISCOE																	
B4-24	4-3⅛x5½	16.3	Conn	Mayer	Splitdorf	C	3	105	30x3½	QD	685	685	†685	....	....	....	....
8-38	8-3 x3½	28.8	Remy	Zenith	Apleo	C	3	114	32x3½	QD	‡985	985	....	....	....	....	....
4-38	4-3½x5½	18.9	Remy	Mayer	Apleo	C	3	114	32x3½	QD	‡785	785	....	....	....	....	....
BRUNSWICK																	
	4-4½x5½	36.1	Bosch	Rafld	Wsths	..	3	....	....	....	....	....	1950	....	....	....	....
BUICK																	
D 4-34																	
35	4-3½x4½	18.2	Delco	Marvel	Delco	C	3	106	31x4	C	660	675	....	....	....	....	....
6-44																	
47	6-3½x4½	25.3	Delco	Marvel	Delco	C	3	115	34x4	SS	1040	1070	‡1440	....	1835	....	....
E-49	6-3½x4½	27.3	Delco	Marvel	Delco	DD	3	124	34x4½	SS	....	....	1385	....	....	....	....
CADILLAC																	
55	8-3½x5½	31.2	Delco	Own	Delco	D	3	132 125	36x4½	SS	†2240	2240	2240	2960	. ..	3760	2835
CASE																	
T-17	4-3½x6	21.0	Conn	Rafld	A-Lite	C	3	120	34x4	QD	†1190	....	1190	....	. ..	....	....
CHALMERS																	
6-30	6-3½x4½	25.4	Remy	Stmbg	Wsths	DP	3	115 122	32x4	SS	1230	1250	1350	1440	1850	2550	....
CHANDLER																	
17	6-3½x5	27.3	Bosch	Rafld	G & D	D	3	123	34x4	SS	†1395	....	1395	1995	1995	2695	1995
CHEVROLET																	
4-90	4-3½x4	21.7	Conn	Zenith	A-Lite	C	3	102	30x3½	C	550	550	....	....	....	....	....
F5-F2	4-3½x4	21.7	Conn	Zenith	A-Lite	C	3	112	32x3½	SS	800	800	....	....	....	....	....
D	8-3½x4	36.45	Conn	....	A-Lite	C	3	120	34x4	SS	1385	....	....	....	....	....	....
COLE																	
8-60	8-3½x4½	39.2	Delco	Stmbg	Delco	C	3	127	35x4½	SS	†1695	....	1695	....	2295	2295	2195
CROW-ELKHART																	
CE-35	4-3½x5	19.6	Conn	Zenith	Dyneto	DP	3	114	32x3½	SS	†825	795	....	....	....	....	935
DANIELS																	
8	8-3½x5	33.8	Wsths	Zenith	Wsths	D	3	127	34x4½	QDR	†2600	....	2800	....	....	4000	....
DAVIS																	
H & I	6-3½x4½	25.3	Delco	Stmbg	Delco	C	3	119	34x4	....	1195	1195	1195	1595	1795	....	1995
J	6-3½x5½	29.4	Delco	Stmbg	Delco	C	3	124	34x4½	....	....	1495	1495	....	....	....	....
DETROITER																	
6-45	6-3½x4½	25.3	Conn	Ball	A-Lite	D	3	119	33x4	SS	‡1195	1195	....	1373	....	....	1398
F	4-3½x4½	22.5	Dixie	Schebler	Dyneto	D	3	112	33x4	SS	....	985	....	....	....	....	....
DISPATCH																	
G	4-3½x5	22.5	Bosch	Rafld	U.S.L.	D	4	120	36x3½	....	1135	1210	....	1400	....	....	....
DIXIE FLYER																	
1917	4-3½x5	16.9	Conn	Carter	Dyneto	C	3	112	32x3½	SS	†795	795	....	....	....	....	....
DODGE BROTHERS																	
	4-3½x4½	24	Delco	Stewart	N.E.	D	3	114	32x3½	S	785	785	....	950	1185	....	950
DORRIS																	
I-B-6	6-4 x5	38.4	Bosch	Stmbg	Wsths	D	3	133	36x4½	SS	....	....	3475	3350	3350	3675	....

Model	Motor	S. A. E.	Ignition	Carburetor	Starter	Clutch	Gearset	Wheelbase	Tire	Rims	2-Passenger	5-Passenger	7-Passenger	Coupe	Sedan	Limousine	Detachable Top
LOZIER																	
84	4-4½x6½	28.9	Bosch	Stewart	G & D	D	4	120	36x4½	SS	....	....	1695	....	....	....	....
82	6-3½x6	36.0	Kismn	Rafld	G & D	D	3	132	36x4½	SS	....	....	2775	....	....	....	....
LUVERNE																	
17	6-3½x5	33.7	Bosch	Schebler	Bosch	DD		132	35x4½	SS	....	....	1500	....	....	....	....
MADISON																	
4	6-3½x5	23.4	Remy	Rafld	Remy	DD	3	120	34x4	SS	....	....	....	....	....	....	....
	6-3½x5	23.4	Remy	Rafld	Remy	DD	3	115	34x4	SS	1050–1150	....	....	....	....	....	....
	6-3½x5	23.4	Remy	Rafld	Remy	DD	3	124	34x4	SS	†1150	(1150) (1250)	1150–1250	....	....	....	....
MAIBOHM																	
A	4-3½x4	15.6	A.Kent	Zenith	Disco	DD	3	105	30x3½	SS	695	....	....	....	....	....	....
MAJESTIC																	
M	8-3 x5	28.8	A.Kent.	....	R & M	DP	3	125	32x4	....	†1500	1650	1650	....	....	....	....
A	8-3½x5	33.8	A.Kent	....	R & M	DP	3	135	35x5	....	†3000	3000	3000	....	....	....	....
MARION HANDLEY																	
6-40	6-3½x5	23.4	Wsths	Stmbg	Wsths	DD	3	120	32x4	SS	†1275	....	1275	....	....	....	....
6-60	6-3½x5½	29.4	Wsths	Stmbg	Wsths	DD	3	125	35x4½	SS	....	....	1475	....	....	....	....
MARMON																	
34	6-3½x5½	33.7	Bosch	Stmbg	Bosch	C	3	136	34x4½	QD	††3100	3050	3100	....	4100	4500	....
MAXWELL																	
25	4-3½x4½	21	Sims	K-D	A.Kent	C	3	103	30x3½	C	620	635	....	865	985	....	....
McFARLAN																	
	6-4½x6	48.6	Bosch	Stmbg	Wsths	DP	3	136	35x5	QDR	3750	3800	3500	....	....	....	....
MERCER																	
22-73	4-3½x6½	22.5	Bosch	Corser	U.S.L.	DD	4	132	34x4½	QDC	†3500	*3500	..	....	....	....	....
22-73	4-3½x6½	22.5	Bosch	Corser	U.S.L.	DD	4	115	32x4	QDC	3400	Raceabout, 3250	..	....	....	....	....
METZ																	
25	4-3½x4	24	Dixie	A.W.T.	G & D	F		108	32x3½	C	545	545	....	....	....	....	....
MITCHELL																	
D-40	6-3½x5	25.4	Conn	Rafld	Splitdorf	C	3	120	32x4	SS	1050	1050	....	....	....	....	....
C-42	6-3½x5	29.4	Conn	Rafld	Wsths	C	3	127	34x4	SS	‡1325	1325	1360	1850	1985	2650	....
MOLINE-KNIGHT																	
C	4-3½x5	22.5	Conn	Schebler	A-Lite	C	3	118	34x4	SS	†1450	1450	....	....	....	....	....
G	4-4 x6	25.6	Conn	Schebler	A-Lite	C	3	122	35x4½	SS	†1750	....	1840	2400	2350	....	....
MONARCH																	
	8-3 x5	28.8	A.Kent	Zenith	....	D	3	125	35x4½	....	....	1500	....	....	....	....	....
MONITOR																	
C-R	4-4½x4½	22.5	Heinse	Schebler	Heinse	D	3	108	32x3½	SS	795	795	....	....	....	....	....
N-O	6-3½x4½	25.4	Heinse	Stmbg	Heinse	D	3	115	33x4	SS	995	995	....	....	....	....	....
MONROE																	
M-3	4-3 x4½	14.4	Conn	Zenith	A-Lite	DD	3	96	30x3	DC	565	....	....	....	965	....	....
M-4	4-3½x4½	16.9	Conn	Zenith	A-Lite	DD	3	115	32x4	DC	....	985	....	....	....	....	....
MOON																	
6-43	6-3½x4½	25.3	Delco	Rafld	Delco	DD	3	118	32x4	SS	‡1295	1295	....	....	....	....	1450
6-66	6-3½x5½	29.4	Delco	Rafld	Delco	DD	3	125	35x4½	SS	†1690	....	1690	1690	2350	....	....
MURRAY																	
70-T	8-3½x5	33.8	Dixie	Zenith	Wsths	DP	3	128	34x4½	..	2500	....	2500	....	....	Chassis	2000
NATIONAL																	
Hgy	6-3½x5½	29.4	Dixie	Rafld	Wsths	C	3	128	34x4½	QDR	†1750	....	1750	2400	2350	....	....
Hgy	12-2½x4½	39.68	Delco	Rafld	Bijur	C	3	128	34x4½	QDR	†2150	....	2150	2800	2750	....	....
NELSON																	
	4-3½x4½	15.6	Bosch	Zenith	U.S.L.	D	3	104	32x4	SS	....	....	....	....	2200	....	....
OAKLAND																	
34	6-2½x4½	18.9	Delco	Marvel	Delco	C	3	112	32x4	SS	‡ 875	875	....	....	....	....	995 1020
50	8-3½x4½	39.2	Delco	Stmbg	Delco	C	3	127	34x4½	SS	....	....	1585	....	....	....	....
OLDSMOBILE																	
45	8-3½x4½	26.4	Delco	Johnson	Delco	C	3	120	33x4	SS	1295	1295	....	....	1850	....	1775
46	6-2½x4½	19.8	Delco	Johnson	Delco	C	3	112	32x4	SS	†1095	1095	...	....	....	....	....
OVERLAND																	
85-4	4-4½x4½	27.2	Conn	Tltsn	A-Lite	C	3	112	32x4	SS	835	850	....	1250	1450	....	....
85-6	6-3½x4½	25.3	Conn	Tltsn	A-Lite	C	3	116	32x4	SS	970	985	....	1385	1585	....	....
OWEN																	
M-25	6-3½x5½	29.4	Bosch	Zenith	O-M	OM	..	125	34x4½	SS	....	3300	....	3650	....	4350	....
O-36	6-3½x5½	33.7	Bosch	Zenith	O-M	OM	..	136	35x5	SS	‡3950	†3950	3950	....	....	5000	....
PACKARD																	
2-35								135									
2-25	12-3 x5	48.2	Bijur	Own	Bijur	DD	3	136	35x5	QDC	3050	3050	3050	4150	....	4450	....
PAIGE																	
6-38	6-3½x5	23.4	Remy	Rafld	G & D	D	3	117	32x4	SS	1175	1175	....	....	....	....	....
6-46	6-3½x5½	29.4	Remy	Rafld	G & D	D	3	134	35x4½	SS	....	....	1695	....	....	....	....

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DORT																			
9	4-3½x5	16.9	Conn	Carter	Wsths	C	3	105	30x3½	QDC	‡995	995	..	..	....	1095	....	615
DREXEL																			
R-30-35	4-3½x5	19.6	Bosch	Stmbg	Bjur	C	3	112	32x4	....	865	865	....	....	....	....	....	....
	4-3½x5	19.6	Bosch	Stmbg	Bijur	D	3	118	34x4	....	†1485	....	1345	....	....	....	....	....
ELCAR																			
D.P.	4-3½x5	19.6	Deleo	Carter	Dyneto	DP	3	115	32x3½	SS	845	845	†845	....	....	....	....	....
ELGIN																			
	6-3 x4½	21.6	Remy	Stmbg	Wagner	DP	3	116	32x4	....	†985	985	....	....	....	....	....	....
EMERSON																			
Four	4-3½x4	22.5	A.Kent	Kngstn	....	D	3	110	30x3½	C	....	895	....	....	....	....	....	....
EMPIRE																			
45	4-3½x5	24.0	A-Lite	Stmbg	A-Lite	C	3	116	32x4	SS	....	960	....	....	....	....	....	....
60-R	6-3½x4½	25.6	Conn	Stmbg	A-Lite	C	3	120	34x4	SS	†1145	....	....	....	....	1635	....	....
70	6-3½x4½	25.6	Conn	Stmbg	A-Lite	DP	3	120	34x4	SS	....	1235	....	....	....	....	....	....
ENGER																			
12	12-2½x3½	34.2	Wsths	Stmbg	Wsths	DP	3	116	32x4	SS	....	1295	....	....	....	....	....	....
4	4-3½x4½	21.7	A-Kent	....	....	C	3	106	32x3½	....	....	695	....	....	....	....	....	....
FIAT																			
55	4-5½x6½	42	Wsths	Zenith	Wsths	D	4	140	35x5	QDC	....	....	5500	....	....	6500	....	....
561	6-4½x6	46.6	Bosch	Own	Own	D	4	125	37x5	QDC	‡5350	5350	5350	....	....	....	....	....
FORD																			
T	4-3½x4	22.5	Own	{Holly Kngstn	....	D	2	100	30x3½	C	345	360	....	505	645	....	....	....
FOSTORIA																			
	4-3 x4½	14.4	Remy	Zenith	....	D	3	106	30x3½	C	....	695	....	....	....	....	....	....
FRANKLIN																			
9	6-3½x4	25.3	A.Kent	Own	Dyneto	D	3	115	32x4	SS	1800	1850	†1850	2650	2750	3000	....	....
GLIDE																			
6-40	6-3½x5	23.4	Wsths	Rafld	Wsths	D	3	119	34x4	SS	....	1250	....	....	1325	....	....	....
GRANT																			
K	6-3 x4½	21.6	Remy	Stmbg	Wagner	C	3	112	32x3½	....	‡825	825	....	1050	1000	....	....	....
HACKETT																			
Four	4-3½x4½	22.5	Conn	Carter	Dyneto	D	3	112	32x3½	SS	†888	888	....	....	....	....	....	....
H. A. L.																			
	12-2½x5	39.6	....	Stmbg	Wsths	DP	3	135	34x4½	SS	3600	†3600	3600	....	....	4500	3500	....
HALLADAY																			
S	6-3 x5	21.6	A-Lite	Stmbg	Wsths	D	3	118	33x4	SS	‡1185	1150	....	....	....	....	....	....
R	6-3½x5	22.0	Wsths	Stmbg	Wsths	D	3	122	34x4	SS	1285	1285	....	....	....	....	....	....
HARROUN	4-3½x5½	16.9	Bosch	Special	Remy	C	3	106	30x3½		....	595	....	....	....	....	....	....
HARVARD																			
4-2T	4-3 x4½	14.4	....	Zenith	Wagner	C	3	100	28x3	QD	750	....	....	....	....	....	....	....
HAYNES																			
36	6-3½x5	29.4	Remy	Rafld	L-N	DP	3	121	34x4	SS	....	1595	....	....	2260	....	....	....
37	6-3½x5	29.4	Remy	Rafld	L-N	DP	3	127	35x4½	SS	†1725	....	1725	....	2390	....	....	....
40	12-2½x5	36.3	Deleo	Rafld	L-N	DP	3	121	34x4½	SS	....	2095	....	....	2760	....	....	....
41	12-2½x5	36.3	Deleo	Rafld	L-N	DP	3	127	34x4½	SS	†2225	....	2225	....	2990	....	....	....
HOLLIER																			
186	6-3 x4½	21.6	Remy	Stewart	A-C	C	3	116	32x3½	SS	....	895	....	....	....	....	....	....
178	8-3 x4½	28.8	A.Kent	Stewart	Apleo	C	3	116	34x4	SS	†1185	1185	....	....	....	....	....	....
HUDSON																			
Super-6	6-3½x5	29.4	Deleo	Own	Deleo	D	3	125½	35x4½	SS	1650	....	1650	1950	2175	2925	....	....
HUPMOBILE																			
	4-3½x5½	22.5	A.Kent	Zenith	Wsths	D	3	119	34x4	SS	1185	1185	....	....	1735	....	....	....
N-U	4-3½x5½	22.5	A.Kent	Zenith	Wsths	D	3	134	35x4½	SS	....	....	1340	....	....	....	....	....
INTER-STATE																			
T	4-3½x5	19.6	Remy	Sohebler	Remy	C	3	110	33x4	SS	875	925	†940	....	....	....	....	....
JACKSON																			
349	8-3 x3½	28.8	A-Lite	Zenith	A-Lite	DP	3	118	34x4	SS	1295	1295	†1395	....	1995	....	1505	....
350	8-3 x3½	28.8	A-Lite	Zenith	A-Lite	DP	3	112	32x4	SS	....	1195	....	....	....	....	....	....
JEFFERY																			
Four	4-3½x5½	22.5	Dixie	Stmbg	Bijur	DP	3	116	34x4	SS	1065	....	1095	....	1260	....	1320	....
Six	6-3½x5½	29.4	Dixie	Rafld	Bijur	DP	3	125	34x4	SS	1435	....	1465	....	1630	....	1690	....
JORDAN																			
Sixty	6-3½x5½	29.4	Bosch	Stmbg	Bijur	DD	3	127	35x4½	SS	1650	†1750	1650	2300	2350	3000	....	....
KING																			
E	8-3 x5	28.8	A.Kent	Ball	W.Lnrd	DP	3	120	34x4	SS	†1585	‡1585	1585	....	2150	....	....	....
KISSEL																			
642	6-3½x5½	31.54	Eisnn	Stmbg	Own	DD	3	128	34x4	SS	....	1650	1850	....	2000	....	....	....
100-pt.	6-3½x5	25.3	Remy	Stmbg	Own	C	3	117	33x4	SS	†1195	1195	....	1635	1950	....	1635	....
KLINE																			
638	6-3½x4½	25.3	Wsths	Rafld	Wsths	DP	3	120	34x4	SS	1175	1195	†1195	....	....	....	....	....
LAUREL																			
35	4-3½x4½	33.8	Dixie	Sohebler	Disco	D	3	112	32x3½	QD	†895	850	885	....	....	....	....	....
LEXINGTON																			
6-O-17	6-3½x4½	25.4	Conn	Rafld	Wsths	DD	3	116	32x4	QD	†1185	1185	....	1350	1350	....	....	....
6-P	6-4½x5½	27.2	A.Kent	Stmbg	Wsths	C	3	144	36x4½	QD	†2675	....	2875	....	....	....	....	....
								132										
LIBERTY																			
6	6-3½x4½	23.4	Deleo	Rafld	Deleo	DP	3	115	32x4		†1195	1195	....	....	1795	....	....	....
LOCOMOBILE																			
R-7	6-4½x5	43.3	Eisnn	Ball	Wsths	DD	4	139	37x5	QDC	†4750	*4600	4600	....	....	5800	....	....
M-7	6-4½x5½	48.6	Eisnn	Own	Wsths	DD	4	142	37x5	QDC	*5400	....	5400	....	....	6500	....	....
PARTIN-PALMER																			
20	4-3½x4½	15.6	Conn	Sohebler	A-C	DD	3	96	30x3½	C	645	..	..	....	....	.....	..	....
32	4-3½x5	19.6	Conn	Carter	Disco	DD	3	110	32x3½	C	...	695	....	....	....	....	....	....
PATERSON																			
6-45	6-3½x4½	25.4	Deleo	Stmbg	Deleo	C	3	117	32x4	C	†1095	1095	1095	....	....	....	....	....
PATHFINDER																			
2B-TC-2C	12-2½x5	39.6	Deleo	Stmbg	Deleo	DD	3	135	35x5	SS	....	....	3250	....	....	....	....	....
PEERLESS																			
56-2	8-3½x5	33.8	A.Kent	Special	G & D	DD	3	125	35x4½	SS	†1890	....	1890	2700	2750	3260	....	....
PHIANNA																			
M	4-3½x6	24.9	Bosch	H & N	W.Lnd.	DD	4	....	32x4½	....	Chassis	....	3600	....	....	....	....	....
PIERCE-ARROW																			
38-C-4	6-4 x5½	38.4	Bosch	Own	Wsths	C	4	134	36x4½	QDC	4800	4800	†4800	5900	....	....	....	....
48-B-4	6-4½x5½	48.6	Bosch	Own	Wsths	C	4	142	37x5	QDC	5400	5400	5000	6800	....	....	....	....
66-A-4	6-5 x7	60	Bosch	Own	Wsths	C	4	147½	38x5½	QDC	†6400	6400	6500	7800	....	....	....	....
PILOT																			
6-45	6-3½x5	23.4	Deleo	Zenith	Deleo	DP	3	119	32x4	SS	†1150	1150	....	....	....	....	....	....
PREMIER																			
6-B	6-3½x5½	27.3	Deleo	Johnson	Deleo	DP	3	125½	35x4½	SS	†1895	....	1895	....	2900	3150	....	....
PRINCESS																			
4-36	4-3½x4½	22.5	Splitdorf	Schebler	Disco	D	3	108	32x3½	....	775	775	‡775	....	....	....	....	....
PULLMAN																			
424-32	4-3½x4½	22.5	Dixie	Stmbg	Splitdorf	D	3	114	31x4	SS	825	825	†825	....	....	....	....	....
REGAL																			
4-32	4-3½x4½	19.6	Heinse	Carter	Heinse	C	3	108	30x3½	DC	....	745	....	....	....	....	....	....
F	8-3 x4½	28.8	....	Johnson	Dyneto	C	3	115	33x4	SS	1200	....	....	....	....	....	....	....
REPUBLIC																			
E	6-4½x5	43.3	Deleo	Rafld	Deleo	C	4	133	36x4½	SS	....	†2950	2950	....	....	....	....	....
REO																			
M	6-3½x5½	30.4	Remy	Rafld	Remy	DD	3	126	34x4½	SS	....	†1250	1250	....	1750	....	....	....
R	4-4½x4½	27.2	Remy	Johnson	Remy	DD	3	115	34x4	SS	‡875	875	....	....	....	....	1025	....
RICHMOND																			
6-17	6-3½x5	29.4	Deleo	Stmbg	Deleo	C	3	124	35x4½	....	....	....	....	....	....	....	....	....
4-35	4-4 x4½	25.6	Dixie	Stmbg	Deleo	C	3	124	35x4½	....	900	900	925	....	....	....	....	....
ROAMER																			
R.A.	6-3½x5	23.4	Bosch	Stmbg	Bijur	D	3	127	34x4	SS	2150	1850	....	....	....	....	....	....
ROSS																			
C	8-3½x5	33.8	A.Kent	Zenith	W.Lnrd.	DD	3	130	35x4½	SS	‡1550	†1550	1550	....	....	....	....	....
SAXON																			
B-5-R	4-2½x4	12.1	A.Kent	Rebh	Wagner	DD	3	96	30x3	DC	495	....	....	....	....	....	....	....
S-4	6-2½x4½	19.8	Remy	Rafld	Wagner	DD	3	112	32x3½	SS	....	865	....	....	....	....	....	....
SCRIPPS-BOOTH																			
D	8-2½x3½	22.0	Remy	Zenith	Wagner	DD	3	120	32x4	SS	†1285	....	....	....	....	....	1460	....
G	4-3½x4	24.5	Remy	Zenith	Remy	C	3	110	30x3½	C	935	....	....	1450	....	....	....	....
SIMPLEX																			
5	6-4½x6½	45.9	Eisnn	Nwemb	Bosch	D	4	143½	37x5r	QDC	Chassis	6000	....	....	....	....	....	....
SINGER																			
17	6-4 x5½	38.4	Bosch	Rafld	Wsths	DD	4	136	35x5	QD	3500	†3500	3500	....	....	4600	....	....
STANDARD																			
8	8-3½x5	33.8	Splitdorf	Zenith	Apleo	D	3	127	35x4½	....	†1950	....	2000	....	....	3500	2500	....
STANLEY																			
Steamer	2-4 x6	....	....	....	....	..	..	130	34x4½	SS	‡2300	2200	2300	....	....	....	....	....
STEARNS																			
SK14	4-3½x5½	22.5	Remy	Schebler	Wsths	DD	3	119	34x4	QDC	††1450	1450	....	2050	....	2900	2050	....
SK8	8-3½x5	33.8	Remy	Rafld	Wsths	DD	3	123	35x4½	QDC	†2150	....	2150	2900	....	3500	....	....
STEPHENS																			
60-65	6-3½x4½	25.3	Conn	Zenith	A-Lite	DD	3	115	32x4	....	‡1150	1150	....	....	....	....	....	....
STEWART																			
T	6-3½x5	29.4	Bosch	Rafld	Wsths	D	3	127	34x4½	SS	‡1950	....	1950	....	....	....	....	....
STUDEBAKER																			
SF-4-40	4-3½x5	24.2	Remy	Schebler	Wagner	C	3	112	34x4	SS	‡930	....	940	....	....	....	1140	....
ED-6-50	6-3½x5	36.32	Remy	Schebler	Wagner	C	3	122	34x4	SS	‡1170	....	1180	1750	1700	2600	1380	....
STUTZ																			
R	4-4½x5½	36.1	Bosch	Stmbg	Remy	C	3	130	34x4½	SS	2275	†2550	*2550	....	....	....	....	....
SUN																			
17	6-3½x5	23.4	Remy	Rafld	Remy	DP	3	116	34x4	SS	†1145	1095	1145	....	1295	....	....	....
VELIE																			
28	6-3½x4½	25.3	Remy	Stmbg	Remy	DP	3	115	32x4	SS	1115	1135	†1135	1750	1685	....	....	....
27	6-3½x5½	29.4	Remy	Stmbg	Remy	DP	4	124	35x4½	SS	....	....	1600	....	....	....	....	....
WESTCOTT																			{2190
S-17	6-3½x5½	29.4	Deleo	Rafld	Deleo	DD	3	125	35x4½	SS	1590	1590	1690	....	....	....	....	{2090
WHITE																			
GAH	4-3½x5½	22.5	Bosch	Own	Own	P	4	115	32x4	QDC	‡2650	2700	.....	..	....	....	....	....
GED	4-4½x6½	28.9	Bosch	Own	Own	P	4	133½	36x4½	QDC	3750	....	3800	....	....	....	....	....
16-Valve	4-4½x5½	28.9	....	Own	L.N.	P	4	137½	37x5	....	....	....	4600	....	....	....	....	....
WILLYS-KNIGHT																			
88-4	4-4½x4½	27.2	Conn	Tltsn	A-Lite	C	3	121	34x4½	SS	....	....	1285	....	1950	1950	....	....
WILLYS																			
88-6	6-3½x5½	29.4	Conn	Tltsn	A-Lite	C	3	125	35x4½	SS	....	....	1325	....	....	....	....	....
WINTON																			
33	6-3½x5½	33.7	Bosch	Rafld	Bijur	DD	4	128	36x4½	QD	2685	2685	2735	3600	3900	3900	....	....
48	6-4½x5½	48.6	Bosch	Rafld	Bijur	DD	4	138	37x5	QD	3500	3500	3500	4500	4750	4750	....	....
YALE																			
8	8-3½x4½	31.25	Remy	Rafld	Disco	DD	3	126	34x	....	....	....	1350	....	....	....	....	....

*6-passenger. †4-passenger, ‡3-passenger.

ABBREVIATIONS—"A-C" Allis-Chalmers, "L-N" Leece-Neville, "Tltsn" Tillottson, "Atzr" Atomizer, "Rebh" Reichenbach, "DD" Dry Disk, "DP" Dry Plate, "G" Gearless, "F" Friction, "QDR" Quick Detachable Reversible, "QDC" Quick Detachable Clincher, "R & M" Robbins & Myers. NOTE—"37½x5½r" means that the rear tires are 37x5½, and the front are smaller.

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Coming Events

Shows

Feb. 7-9—Washington, Pa., Washington Automobile Dealers' Association, Washington Amusement Co. Rink. C. B. McAlister, Sec.

Feb. 7-10—Bay City, Mich., Automobile and Accessories, Armory. F. D. Shaver, Mgr.

Feb. 7-11—Kalamazoo, Mich., State Armory, Kalamazoo Automobile Dealers' Assn. R. E. Fair, Mgr.

Feb. 10-17—Harrisburg, Pa., Capital City Motor Car Dealers' Association, Tenth and Market Streets. J. Clyde Myton, Mgr.

Feb. 10-17—Hartford, Conn., Hartford Automobile Dealers' Association, State Armory. B. F. Smith, Mgr.

Feb. 10-18—San Francisco, Cal., Show, San Francisco Motor Car Dealers' Assn., Exposition Auditorium. G. A. Wahlgreen, Mgr.

Feb. 12-17—Toledo, O., Toledo Auto Shows Co. H. V. Buelow, Mgr.

Feb. 12-17—Louisville, Ky., Tenth Annual Show, First Regiment Armory, Louisville Automobile Dealers' Assn. P. S. Longest, Mgr.

Feb. 12-17—Kansas City, Mo., Show, Kansas City Motor Car Dealers' Assn.

Feb. 12-17—Kansas City, Mo., Second Annual Tractor Show, Union Station Plaza.

Feb. 13-17—Williamsport, Pa., Armory Hall. John Kelley, Mgr.

Feb. 13-17—Sioux City, Ia., Sioux City Auto Dealers' Trade Assn., Auditorium and Annex. J. A. Fleming, Mgr.

Feb. 14-17—Peoria, Ill., Show, Peoria Automobile and Accessory Dealers' Assn., Coliseum. W. O. Ireland, Mgr.

Feb. 15-17—Racine, Wis., Fifth Annual Racine Auto Show Assn., Lake Side Auditorium. Chas. A. Myers, Mgr.

Feb. 17-24—Albany, N. Y., Sixth Annual, State Armory, Albany Automobile Dealers' Assn.

Feb. 19-24—Bridgeport, Conn., Fourth Annual, State Armory and Casino. B. B. Steiber, Mgr.

Feb. 19-24—Pittsfield, Mass., State Armory. James L. Callahan, Mgr.

Feb. 19-24—Portland, Me., Exposition Building.

Feb. 19-24—South Bethlehem, Pa., Third Annual, Pleasure Cars, Coliseum. J. L. Elliott, Mgr.

Feb. 19-24—St. Louis, Mo., Show, St. Louis Automobile Manufacturers' and Dealers' Assn., Overland Building. Robt. E. Lee, Mgr.

Feb. 19-24—Duluth, Minn., Show, New Armory Building, Duluth Automobile Dealers' Assn. W. Daly, Mgr.

Feb. 19-24—Syracuse, N. Y., Show, State Armory, Syracuse Automobile Dealers' Assn., H. T. Gardner, Mgr.

Feb. 19-24—Des Moines, Iowa, Eighth Annual Show, Des Moines Automobile Dealers' Assn., Coliseum. C. G. Van Vliet, Mgr.

Feb. 19-24—Grand Rapids, Mich., Eighth Annual Show, Automobile Business Association of Grand Rapids, Klingman Furniture. Ernest T. Conlon, Mgr.

Feb. 19-24—Springfield, O., Memorial Hall. Springfield Automobile Trade Assn. C. S. Burke, Sec.

Feb. 21-23—Springfield, Mo., Springfield Automobile and Accessories Assn.

Feb. 21-24—Flint, Mich., Flint Auto & Accessory Houses, Coliseum, Lake Side Park. E. W. Jeffers, Mgr.

Feb. 22-24—Asheville, N. C., Asheville Auto Trade Assn.

Feb. 24-Mar. 3—Newark, N. J., N. J. Auto Trade Association, First Regiment Armory. Claude E. Holgate, Mgr.

Feb. 24-Mar. 3—Atlanta, Ga., Atlanta Auto Trade & Accessory Assn., Auditorium. R. H. Martin, Mgr.

Feb. 24-March. 6—Brooklyn, N. Y., Sixth Annual, Brooklyn Motor Vehicle Dealers' Assn., Twenty-third Regiment Armory.

Feb. 26-Mar. 3—Charleston, S. C., First Charleston Adv. Club and Local Dealers. Tent, Marion Square. Sidney Rittenberg, Mgr.

Feb. 26-Mar. 3—Wilkes-Barre, Pa., Hugh B. Andrews, Mgr.

Feb. 26-March 3—Utica, N. Y., Utica Automobile Dealers' Assn., State Armory.

Feb. 26-March 3—Omaha, Neb., Twelfth Annual Show, Omaha Automobile Show Assn. Clarke G. Powell, Mgr.

Feb. 26-Mar. 3—So. Bethlehem, Pa., Commercial Vehicles. J. L. Elliott, Mgr.

Mar. 1-3—Champaign and Urbana, Ill., Auto Trade Association of Champaign County, University of Illinois Armory. Leslie R. Lumley, Mgr.

Mar. 3-5—Green Bay, Wis., Brown County Automobile Trade Assn., Armory B.

March 3-10—Washington, D. C., Middle Atlantic Motor Assn., Inc., Union Bldg.

March 3-10—Boston, Mass., Fifteenth Annual Show, Boston Automobile Dealers' Assn. C. I. Campbell, Gen. Mgr.

Mar. 5-10—Jamestown, N. Y., Third Annual, Jamestown Automobile Dealers' Assn.; Armory, C. A. Hanvey, Mgr.

Mar. 6-10—Bridgeton, N. J., Second Annual.

March 6-10—Fort Dodge, Iowa, Sixth Annual Show, White Terminal Warehouse. G. W. Tremain, Mgr.

March 7-10—St. Joseph, Mo., St. Joseph Automobile Dealers' Assn., Auditorium.

Mar. 13-16—Vancouver, B. C., British Columbia Automobile Association, Horse Show Bldg.

Mar. 13-16—Fargo, N. D., North Dakota and Minnesota Auto Dealers' Association, Auditorium and Armory. W. M. Ball, Mgr.

March 14-17—Mason City, Iowa, Third Annual, Armory.

March 14-17—Davenport, Iowa, Show, Coliseum Building, Tri-City Automobile Trade Assn. C. F. Burmeister, Mgr.

Mar. 17-24—Pittsburgh, Pa., Motor Square Garden, J. J. Bell, Mgr.

Mar. 19-24—Paterson, N. J., Sixth Annual, Paterson Automobile Dealers' Assn. Auditorium. Robert A. Mitchell, Mgr.

Mar. 19-24—Cedar Rapids, Iowa, Show, Cedar Rapids Automobile Trade Assn.

Mar. 21-24—Trenton, N. J., Trenton Auto. Trade Assn., Armory. John L. Brock, Mgr.

Mar. 27-31—Deadwood, S. D., Fifth Annual, Deadwood Auto Show. J. E. Nelson, Mgr.

April 4-7—Stockton, Cal., Second Annual, San Joaquin Auto Trades Assn. Samuel S. Cohn, Mgr.

Sept. 2-9—Spokane, Wash., Interstate Fair.

General

June 4, 5, 6—Hot Springs, Va., Summer Meeting, National Association Automobile Accessory Jobbers, Homestead Hotel.

Resta and Aiken Are Crowned

CHICAGO, Feb. 1—Dario Resta, 1916 racing champion, and Johnny Aiken, runner-up, formally received their laurels at the banquet tendered to them by the American Automobile Association at the Chicago Automobile Club. Resta received as his share of the prizes $5,000 offered by Goodrich, $1,000 cash and the $1,000 loving cup presented by Bosch. Aiken was richer by two checks, one for $3,000 from Goodrich, and another for $1,000 from Bosch. Eddie Rickenbacher, who takes third place and was to have been a guest of honor, is in Europe scouting for drivers for this year's racing season. His share of the evening's wealth was $2,000 from Goodrich and $500 from Bosch, which was intrusted to Richard Kennerdall, chairman of the A. A. A. contest board, to be given to Rickenbacher's mother at Columbus, Ohio.

Announcement was made that the Bosch Magneto Co. would renew its annual offer with the same regulations as last year. The Hudson company will have five cars on the speedways this year with Arthur Hill, former manager for Resta, as team manager. Mulford will be the star driver; Vail will also drive, and Billy Chandler will be in charge of the mechanical end. James Allison stated that Indianapolis will go back to the five-century race this year.

Additional Branches for Bearings Service

NEW YORK, Feb. 6—The Bearings Service Co., with general offices in Detroit, and branches in all the principal cities, will open four new branches this spring. These will be at Philadelphia, Rochester, N. Y., Cleveland and Indianapolis.

Stewart Warner Earns 21 per Cent

CHICAGO, Feb. 6—Stewart Warner Speedometer Corp. has earned the equivalent of 21 per cent on its $10,000,000 outstanding common stock during the past year. The statement for 1916 just issued shows that the net profits and incomes totaled $2,215,042. Dividends on preferred and common stock were paid to the amount of $638,556, leaving $1,576,486 net income. To this is added miscellaneous credits and a surplus arising from a revaluation of the plants and properties making the net surplus for the year $2,105,967.

Motor Securities Quotations

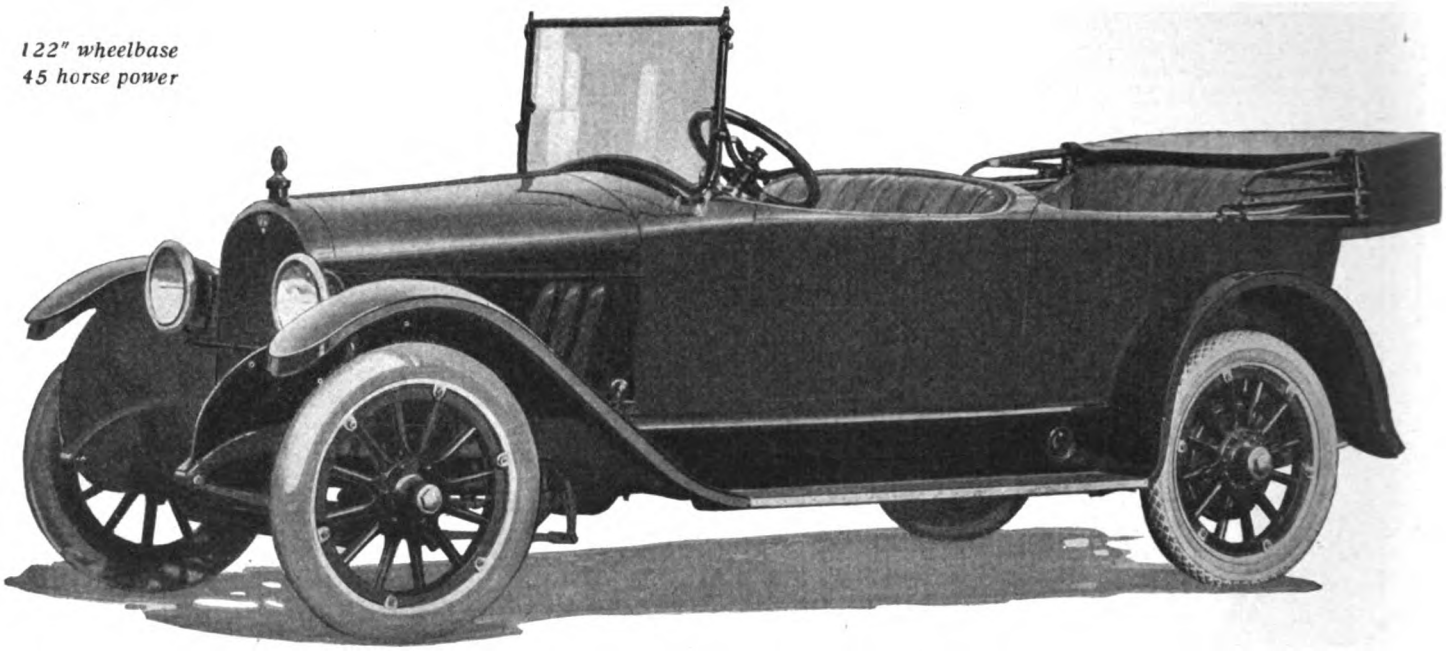
	Feb. 3, 1917 Bid	Asked
Ajax Rubber Co.	66	70
J. I. Case T. M. Co., pfd.	80	88
Chalmers Motor Co., com.	30	34
Chalmers Motor Co., pfd.	—	—
*Chandler Motor Car Co.	92½	93½
Chevrolet Motor Co.	92	94
Fisher Body Corp., com.	36	40
Fisher Body Corp., pfd.	94	97
Fisk Rubber Co., com.	104	108
Fisk Rubber Co., 1st pfd.	100	105
Fisk Rubber Co., 2nd pfd.	80	100
Firestone Tire & Rub. Co., com.	144	146
Firestone Tire & Rub. Co., pfd.	108	109
*General Motors Co., com.	103	110
*General Motors Co., pfd.	83	88
*B. F. Goodrich Co., com.	53½	54½
*B. F. Goodrich Co., pfd.	—	—
Goodyear Tire & Rubber Co., com.	277	280
Goodyear Tire & Rubber Co., pfd.	107½	108¼
Grant Motor Car Corp.	6	8
Hupp Motor Car Corp., com.	4	4½
Hupp Motor Car Corp, pfd.	—	—
International Motor Co., com.	15	19
International Motor Co., 1st pfd.	65	75
International Motor Co., 2d pfd.	25	35
*Kelly-Springfield Tire Co., com.	51½	52
*Kelly-Sp'gfield Tire Co., 1st pfd.	90½	—
*Lee Rubber & Tire Corp.	22	23
*Maxwell Motor Co., com.	50	51
*Maxwell Motor Co., 1st pfd.	66	67½
*Maxwell Motor Co., 2d pfd.	32½	33
Miller Rubber Co., com.	254	256
Miller Rubber Co., pfd.	105¾	106¾
Packard Motor Car Co., com.	—	161
Packard Motor Car Co., pfd.	100½	103
Paige-Detroit Motor Car Co.	40½	41¼
Peerless Truck & Motor Corp.	14	17
Portage Rubber Co., com.	166	169
Portage Rubber Co., pfd.	—	—
Regal Motor Car Co., pfd.	27	35
†Reo Motor Car Co.	37½	38
Saxon Motor Car Corp.	50	52
Springfield Body Corp., com.	70	90
Springfield Body Corp., pfd.	110	125
Standard Motor Construction Co.	5	6
Stewart Warner Spd. Corp., com.	98¼	99¼
Stewart Warner Spd. Corp., pfd.	—	—
*Studebaker Corp., com.	98	101
*Studebaker Corp., pfd.	—	—
Swinehart Tire & Rubber Co.	84	86
United Motors Corp.	37½	38
*U. S. Rubber Co., com.	53¾	54
*U. S. Rubber Co., pfd.	105¾	107¾
White Motor Co.	47	48
*Willys-Overland Co., com.	31¾	32
*Willys-Overland Co., pfd.	—	—

*At close, Feb. 3, 1917. Listed N. Y. Stock Exchange.
†Par value $10; others $100.

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East and West Agree

—that in the *AMERICAN SIX* Louis Chevrolet and his associates have produced a car that is distinctly uncommon and complete.

At the New York and Chicago Automobile Shows the public and the trade alike endorsed the obvious sensible-ness of the *AMERICAN SIX*. They have labelled it a successful car.

Not a car merely *different*—but differently good.
A *Big* car that is comfortable but with low gasolene consumption and small tire expense.
A car of good judgment—sized right, tired right, powered right and priced right.
A car that has the sum total of things desirable in a motor vehicle—*Roadability*.
You will hear much of the Roadability of the AMERICAN SIX in the months to come.

And in the Meantime

The opportunity to secure the agency-representation of the AMERICAN SIX is still open to a *limited number* of automobile merchants. Only 3,000 of these cars will be built this season and we will take on no more agents than we can serve whole-heartedly and in a way satisfactory from every angle. You may have your share of the total provided you act promptly. Applications for territory are being considered in the order of their receipt.

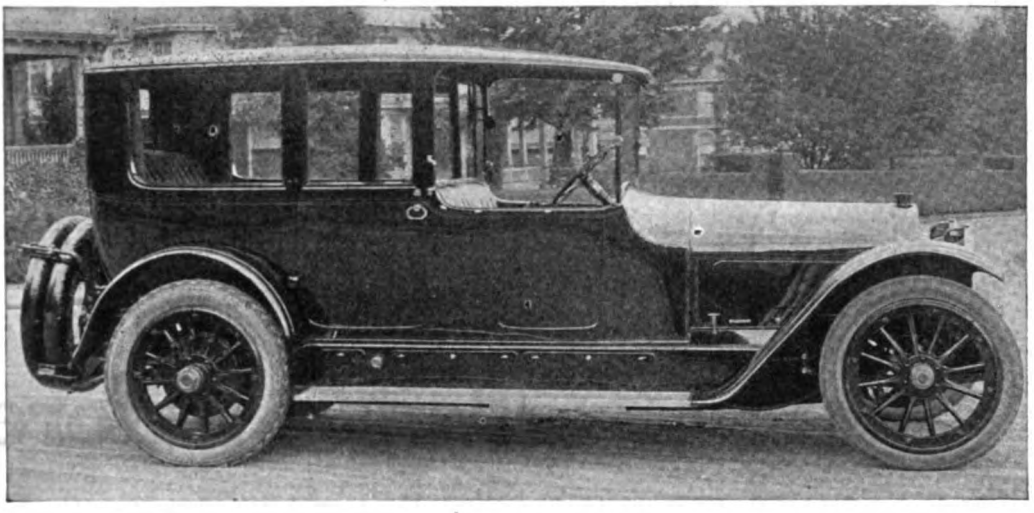
Deliveries of the AMERICAN SIX are now proceeding in quantities and therefore dealers who contract for cars may count upon receiving their full quota. No contracts beyond our capacity to deliver will be entered into.

AMERICAN MOTORS CORPORATION
Plainfield, New Jersey, and New York

AMERICAN SIX $1285

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The LOCOMOBILE IS WALTHAM-EQUIPPED



The makers of the Locomobile are convinced that an automobile clock is a necessary part of every fine car.

The Waltham, having two mainsprings, an eight-day movement, and a winding indicator, and being adjusted to temperature and climate, and re-inforced against motor vibration, is the *only* accurate automobile timepiece made.

Why not put the name of *your* car among the twenty leaders of motordom equipped with the Waltham?

The Waltham is a regular feature of equipment in the following cars:

Brewster
Cadillac
Cole
Crane
Detroit-Electric
Franklin
Haynes
Hudson
Locomobile
Lozier



The Waltham is a regular feature of equipment in the following cars:

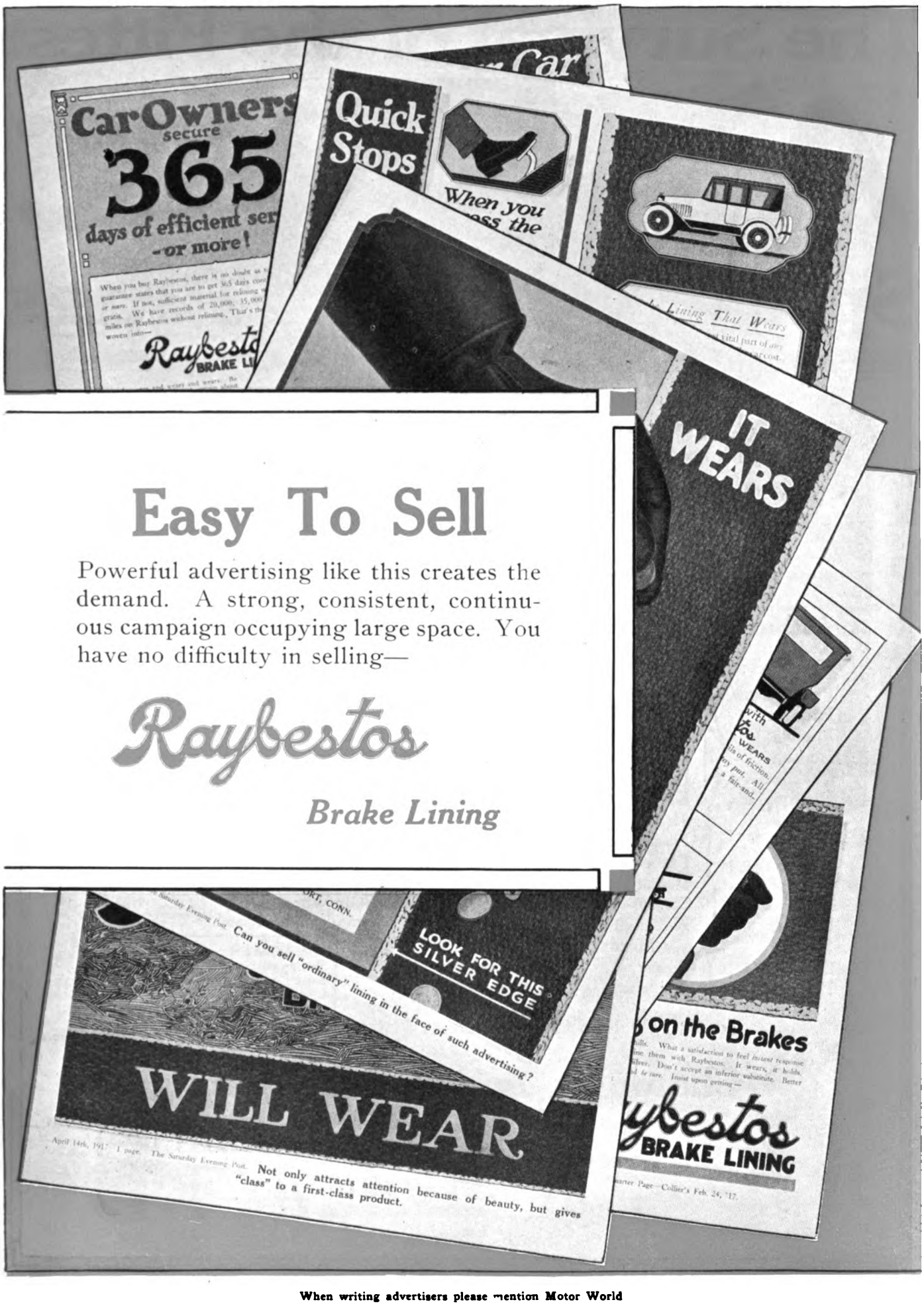
Marmon
Mercer
Owen Magnetic
Packard
Pierce-Arrow
Rauch & Lang
Rolls-Royce
Simplex
Stearns
Winton

WALTHAM WATCH COMPANY, WALTHAM, MASS.

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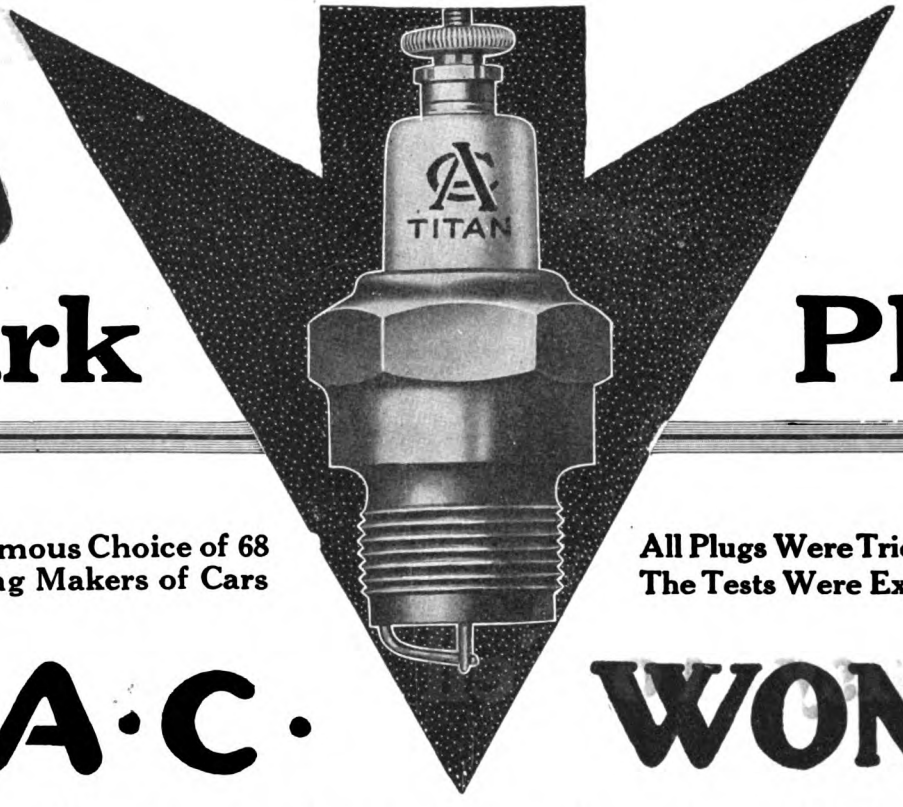
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The Survival of the Fittest

A C Spark Plugs



Unanimous Choice of 68 Leading Makers of Cars

All Plugs Were Tried Out—The Tests Were Exhaustive

A·C· WON

At the Shows and Always, These Cars Are AC Equipped

Cadillac	Buick	United Truck	Bour-Davis	G. M. C.
Pierce-Arrow	Oakland	Wilcox Trux	Lexington-Howard	Diamond T Truck
Packard	Oldsmobile	National	Murray	Netco Truck
Marmon	Jeffery	Velie	Monroe	Gramm-Bernstein Truck
Hudson	KisselKar	Jackson	Signal Truck	BrockwayTruck
Chalmers	Premier	Westcott	Sandow Truck	Federal
Hupmobile	Knox	Pathfinder	Sterling Truck	Abbott
Haynes	Jordan	Chandler	Chase Truck	Gabriel Truck
Dort	Liberty	Chevrolet	Moreland Truck	Anderson
Cole	Crane-Simplex	Apperson	Republic Truck	
Reo	Dodge Brothers	Davis	Four Wheel Drive	
Paige	Stearns-Knight	Daniels	American-La France	
Peerless	McLaughlin (Canada)	Detroiter		
Saxon	Singer	Paterson		
Stutz	Stephens	McFarlan		
Pilot		Scripps-Booth		

MR. DEALER;
Your customers is glad to take your advice; he knows YOU KNOW.

Look for the "AC" Burnt Into the Porcelain



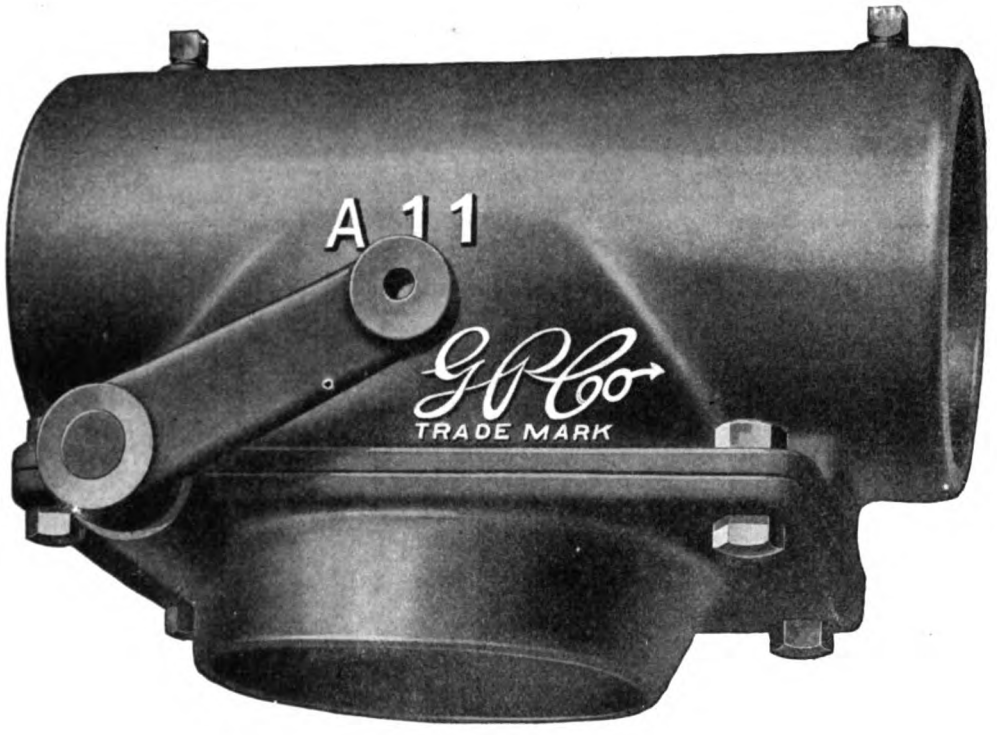
Champion Ignition Company

Flint, Michigan

The Standard Spark Plug of America



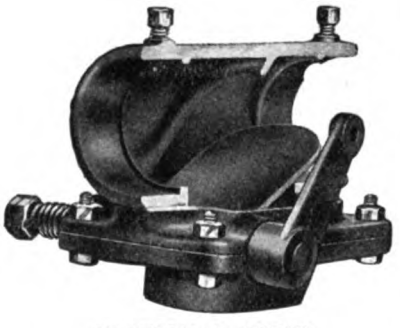
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Tells The Motor's Secrets

You are wasting gas and losing power if your motor is not hitting on every cylinder.

The motorist with the G-P Muffler Cut-Out can instantly tell when his motor ceases to fire properly.



SECTIONAL VIEW

This feature is especially important in hill climbing. It accentuates the noise of each explosion.

Special model for Packard and Ford

A special G-P Muffler Cut-Out is made for the Packard Twin-Six, the only one on the market. For Fords there is a special outfit consisting of cut-out, pedal and chain.

Write for full information

Exclusive Features of G-P Muffler Cut-Out

It does not cause back pressure. Its design and construction prevent carbon accumulating.

It does not leak.

It gives your motor complete relief.

Manufacturers
THE G. PIEL CO., Inc.
Long Island City, N. Y.

Sales Department
EDWARD A. CASSIDY CO., Inc.
579 Foster Bldg., Madison Ave. & 40th St., New York

G-P Muffler Cut-Out

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POVASCO

RADIATOR FILLER CAPS



A Complete Service

PLACING POVASCO composition at the disposal of the industry in the form of high quality Radiator Filler Caps is a service that surely will be appreciated by a car owner, and taken advantage of by every jobber and dealer in the United States. Because with 20 separate models of Radiator Caps we take care of practically all of the popular cars that are now being made.

These Caps are moulded from a special composition which, when burnished, takes a high, attractive polish, and at the same time withstands heat, cold, rain and sunshine without any deterioration of either efficiency or finish.

When one considers the make-up of the ordinary radiator filler cap and contrasts it with the indestructible and beautiful POVASCO construction, it is obvious that our statement made in the caption is true. With this line we render the trade A COMPLETE SERVICE.

How complete that service is, is shown from another angle by the list of cars printed at the right, in which the various makes are listed with the number of POVASCO Cap which is designed to fit the radiator.

Jobbers and dealers should get in touch with us immediately to find out how attractive a proposition we can make on these caps. We do not wish to hurry you unduly, but we do urge that you get in your request soon so that we can provide for you in this year's production.

Write for beautiful booklet describing these and the POVASCO Steering Wheel.

Pouvailsmith Corporation
Poughkeepsie **New York**

Makes of Cars and Their Cap Numbers

Abbott-Detroit	3	Kissel Kar	5
Allen	2, 8	Krit	6
American Motors	12	Locomobile	5
Auburn	3	Lozier	10
Barley	1	McFarlan	5
Bartholomew	8	Madison	12
Bell Motor	13	Malcolm	6
Bour-Davis	12	Martin Carriage	13
Buick	9	Maxwell	16
Cadillac	4	Mercer	18
Carter Car	8	Meteor	17
Case	3	Michigan	8
Chalmers (Model 17)	14	Mitchell	3
Chalmers 1912 or earlier	3	Moline	8
Chalmers 1915-16-17	20	Moline Plow Tractor	1
Chandler	5	Moon	4, 6
Chevrolet Baby Grand	8, 12	Oakland	5
Chevrolet Little Six	1	Oakland, 1916-Little Six	1
Chevrolet Royal Mail	8, 12	Oldsmobile	5
Chevrolet (490)	13, 16	Oldsmobile 1916	14
Cole	5	Paige 1914 or earlier	1
Crawford	3	Paige 1915	5
Cunningham	3	Paige 1915 and 1916	17
Dauch Tractor	1	Patterson	8
Denby	1	Pierce-Arrow	3, 5
Detroiter	17	Pilot	6
Diamond T Truck	8	Reo	19
Dodge	2	Republic Truck	8
Dort	8	Rock Hill Motor Buggy	12
Empire	1	Ross Eight (All Models)	17
Fisher-Magic	3	Saxon	3
Ford	11	Scripps	1
Glide	7	Service Truck	8
Grant	8	Shaw Taxicab	8
Haynes	3	Speedwell	3
Henderson	5	Standard Truck	8
Herreshoff	6	States Motor	13
Hudson 6-40	4, 6	Stearns-Knight 4 cylinder	5
Hupp 1915 and after	7	Stearns-Knight 8 cylinder	8
Imperial	3	Stevens-Duryea	5
Indiana Truck	8	Studebaker	2
Interstate	8	Stutz	3
Jackson	6, 8	Sun	12
Jeffery 4 cylinder	17	Velie 1916	8
Jeffery Truck	17	Velie 1914 and 1915	2
Jeffery 1916 and 1917	15	Westcott	3
Kentucky Wagon	13	White	3
King	1, 12	Winton	3

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EUREKA RIM COMPRESSOR

9,456 Sold at the N.Y. and Chicago Shows

to people who saw the Eureka Rim Compressor demonstrated. They did not come to buy—they were sold by seeing the Compressor in operation. This number does not represent a fifth of the people who were interested, and will buy Eureka when they see it on sale, or when they need a compressor.

The success of the *Eureka Rim Compressor* is based on the quick, effective way it does the job, and on its mechanical excellence. It will remove and replace a tire in 12 seconds. Its long handle and eccentric bearing gives the tool a tremendous leverage which enables you to handle any sized rim with comparative ease.

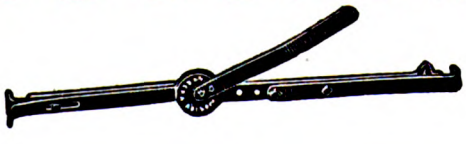
The fact that the lever locks when in alignment and cannot slip, holding the rim in a collapsed position, permits you to use both hands to remove the tire. The specially devised ends, which operate on the rim, are put in place directly, both in removing and replacing tires, without adjusting clamps or screws.

You cannot damage the rim or the casing in any way. Nor can you pinch your tube, or spring your rim out of shape with the Eureka Rim Compressor.

Fits all sizes of transversely split rims. Made of channel steel, well bolted and riveted. Every part guaranteed. Cannot get out of order.

Parcel Post Weight, 6 lbs. Dealers or Direct.

EUREKA RIM COMPRESSOR



Eureka Air Compressor Incorporated
Addison New York

Price $3

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It Pays to Have an Expert Repair Your Battery

By the Willard Service Station Man

It doesn't pay to repair a tire when it's given ten to fifteen thousand miles of service—when it is rim-cut and its casing is torn to ribbons.

But when it is merely punctured it *does* pay.

And batteries are like tires—except that a good battery, well cared for, should outlast a set of tires and costs less to begin with.

Sooner or later both batteries and tires wear out and have to be replaced.

But when it's merely a matter of re-insulation or of replacing a single cell it often *is* worth while to repair a battery.

This, however, should not be left to the judgment of a man who isn't a battery expert.

Better depend on a Willard Service Station to advise your customers—and also to do the work.

It's our business. We've been trained for it by Willard factory experts, and Willard Service was established to give your car-users the fullest possible return on their investment.

And Willard Service backing up Willard quality is the reason why over a million cars have been equipped with Willard Batteries.

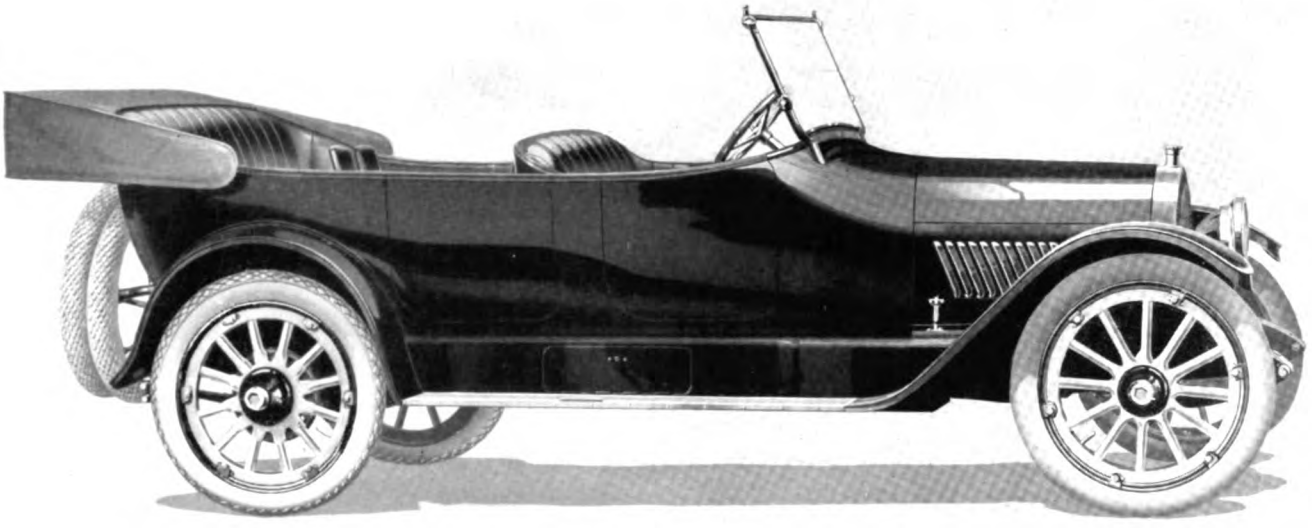
If I find a battery needs to be repaired, I have a rental battery for the car-owner's use while his is in the shop.



For addresses of the 850 Willard Service Stations write to the Willard Storage Battery Co., Cleveland, Ohio.

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THE OLDSMOBILE SEVEN-PASSENGER MODEL



· POWER ·

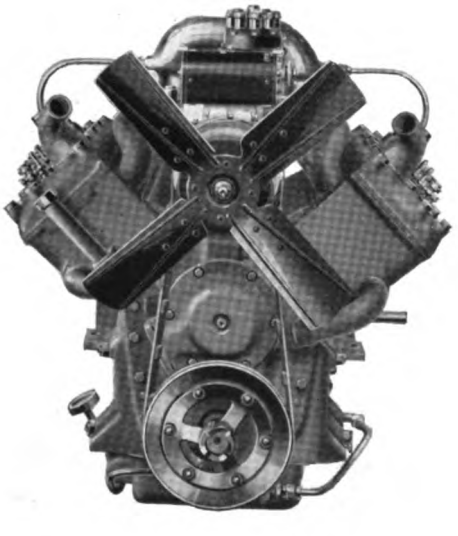
THE automobile prospect wants to know what power is actually delivered to the driving wheels of a car and its proportion to the total car weight. The New Series Oldsmobile gives him more power than he thought possible in a car of its size and price.

In the first place it is a car of light weight—the seven-passenger touring car weighs approximately 3,000 pounds, ready for the road.

It has an eight-cylinder motor with balanced crankshaft and nine-ounce aluminum alloy pistons. It develops 50 horse power, brake test. This power, continuously applied by the overlapping impulses of eight cylinders, in a car of such light weight, produces a flexibility that makes gear changing almost unnecessary.

The car buyer of today wants slow speed in high—quick acceleration—plenty of power for hills—quietness—smoothness.

The New Series Oldsmobile has all these characteristics in a greater degree than he ever hoped for. It is a delight to demonstrate it because it "makes good" far beyond expectations.



Some new dealers will be added to the Olds organization to take care of the big demand for the New Series Oldsmobile.

We shall consider applications from responsible dealers in open territory who will carry the Oldsmobile as a leader.

OLDS MOTOR WORKS
Lansing, Michigan

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NEW SERIES

Oldsmobile

NINETEENTH YEAR

Details of the New Series

WHEEL BASE—120 inches, with unusually ample body, due to short, compact motor.

MOTOR—Eight cylinder, V-type, high speed motor with balanced crank shaft, light weight, drop forged connecting rods, and nine-ounce aluminum alloy pistons, reducing internal resistance, vibration, and bearing pressure to a minimum. L-head with inclined valves. Cylinders cast four en-bloc with adjoining half of crank case, only two castings, bearings in left-hand block—a patented feature. Three-point suspension. Motor develops 50 horse power brake test.

LUBRICATION—Force feed by gear pump direct to bearings. Pressure indicated by oil gauge on dash.

ELECTRIC SYSTEM—Oldsmobile-Delco lighting, starting, and ignition.

SPARK ADVANCE—Automatic.

CABURETOR—Automatic compensating type, minus springs, water jacketed.

GASOLINE SYSTEM—Vacuum feed type, gasoline tank in rear.

TRANSMISSION—Unit with motor, selective type, center control. Three speeds forward and reverse. Hardened steel gears, transmission shaft mounted on ball and roller bearings.

CLUTCH—Leather faced, cone type.

DRIVE—Hotchkiss type, through rear springs. Tubular drive shaft with two large universal joints.

REAR AXLE—Full floating, spiral bevel type.

BRAKES—Service brakes, external contracting; emergency brakes, internal expanding. Brakes adjustable by thumb nut.

SPRINGS—Front, semi-elliptic; rear, three-quarter elliptic, underslung.

UPHOLSTERY—Extra quality long grain, bright finish, black leather, box pleated, with no buttons to gather dust and dirt.

DASH—Walnut, with nickel finished instruments, mounted flush—oil pressure gauge, speedometer, eight-day clock, ammeter, lighting and ignition switches.

LAMPS—Double bulb headlights, tail light, dash light, tonneau light.

TIRES—33 x 4 on all but 7-passenger which carries 34 x 4. Non-skid on rear wheels throughout.

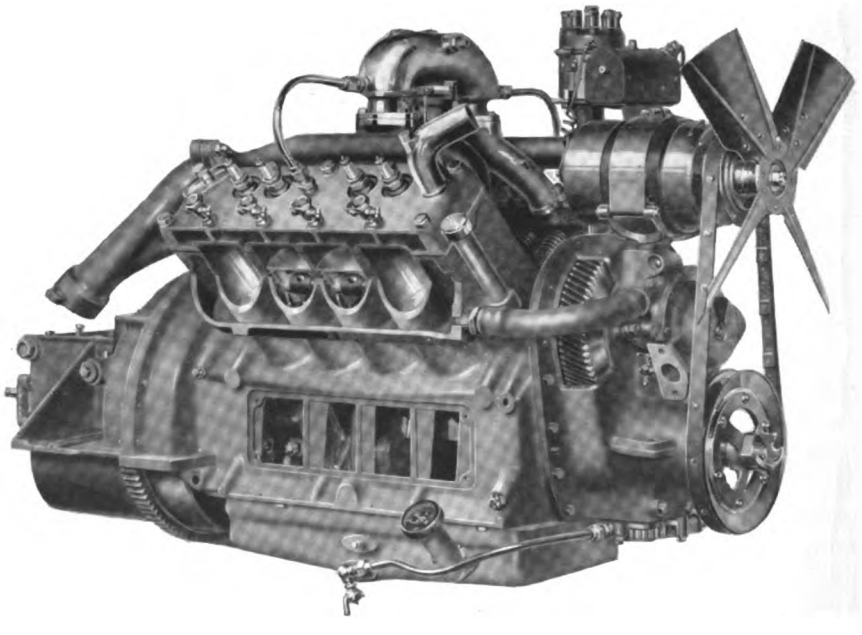
The Oldsmobile line comprises

Seven Passenger Touring Car	Sedan
Five Passenger Touring Car	Cabriolet
Club Roadster	Convertible Roadster

Club Roadster

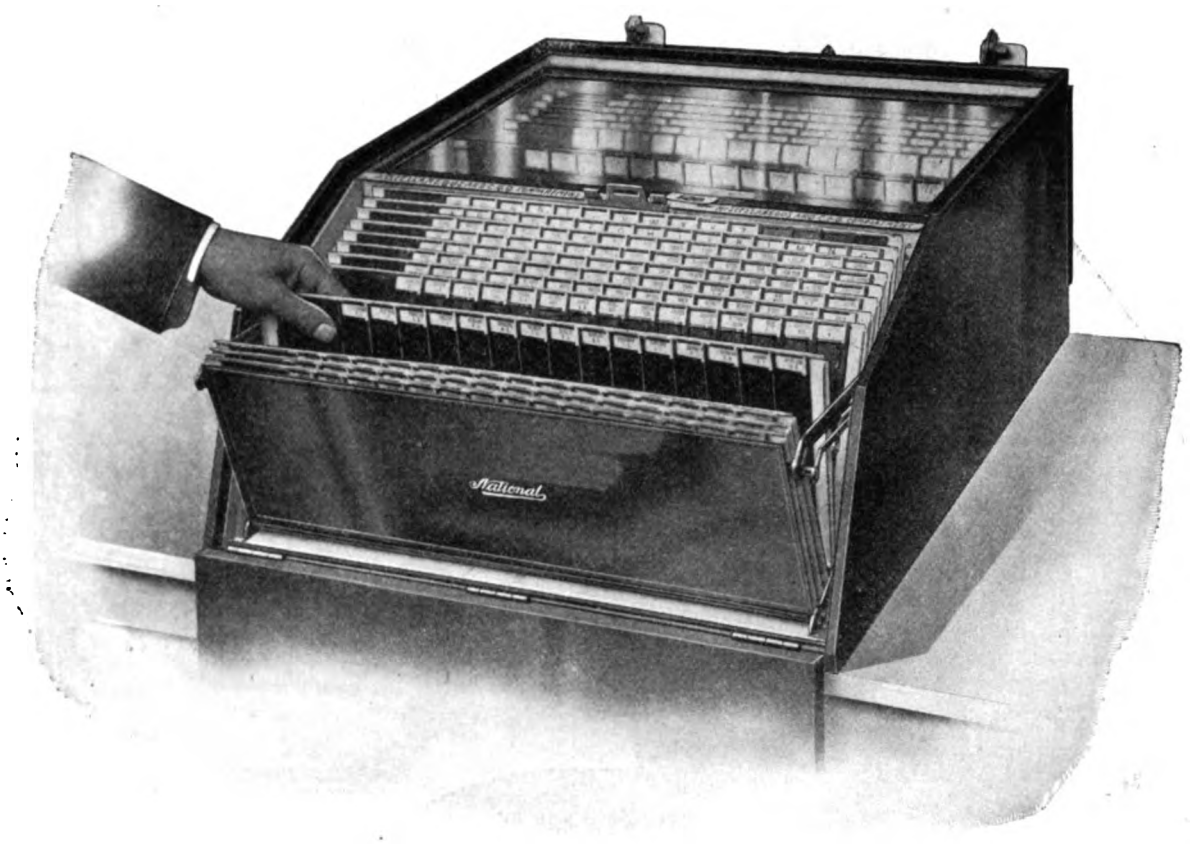
This is a most ingenious design to combine roominess and beauty of line.

While it is called a four-passenger car, it seats five comfortably. Tremendous popularity is definitely predicted for the car by every dealer who has seen it. Price $1295, f. o. b. Lansing.



OLDS MOTOR WORKS, LANSING, MICHIGAN

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A New N. C. R. Invention

As important to you as your telephone or cash register

It's a new credit file that *safeguards* your credit business—in a better, easier, safer, quicker way than you thought possible.

It is so simple that anyone can operate it.

It is so speedy that all entries are made in the presence of the customer, who leaves with a statement of the purchase—plus a record of the balance carried forward.

It is so convenient that you can set it on any size counter, table or desk. The exact balance due from any customer is instantly available, and the file can be operated with one hand while the other holds the telephone receiver.

It is so complete that a true record of the whole credit business is always available in short order. And this knowledge alone is worth more than the cost of the file.

It is so safe that records once filed in its locked compartment cannot be lost or destroyed. Records can be seen, but not tampered with.

A few weeks' use will pay for it.

There's nothing else like it, and it can be seen at the N C R office near you, or a letter to us will bring you complete information.

See this new file or find out how it will stop your losses, please your customers, and relieve you of work and worry. Use the coupon.

The National Cash Register Company
Dayton, Ohio

The National Cash Register Co. Dayton, Ohio

Please send full information about your new Credit File.

We have about..... Charge and C. O. D. accounts

Name.....

Firm.....

Address.....

.....

Motor World

When writing advertisers please mention Motor World

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—for both prove their worth through their ability to resist wear in the grind of steady service. But shoes may wear out without actual danger. Quality in Brake Lining is absolutely vital.

GARCO is built to back your good workmanship. It is a firm foundation on which hundreds of dealers are building a reputation for quality work and quality accessories of all kinds. GARCO is solidly woven. It holds with the grip of a giant till the last shred is entirely gone. For **Safety's** sake, recommend GARCO for every brake lining renewal. When your customer leaves the choice of brake lining up to you, **use GARCO.** Clinch his future business along this line for all time.

GARCO is sold by all Jobbers. Write yours today for our fair-deal proposition. The GARCO Line of Asbestos Auto Specialties is complete. Investigate GARCO Transmission Band Lining for Ford Cars.

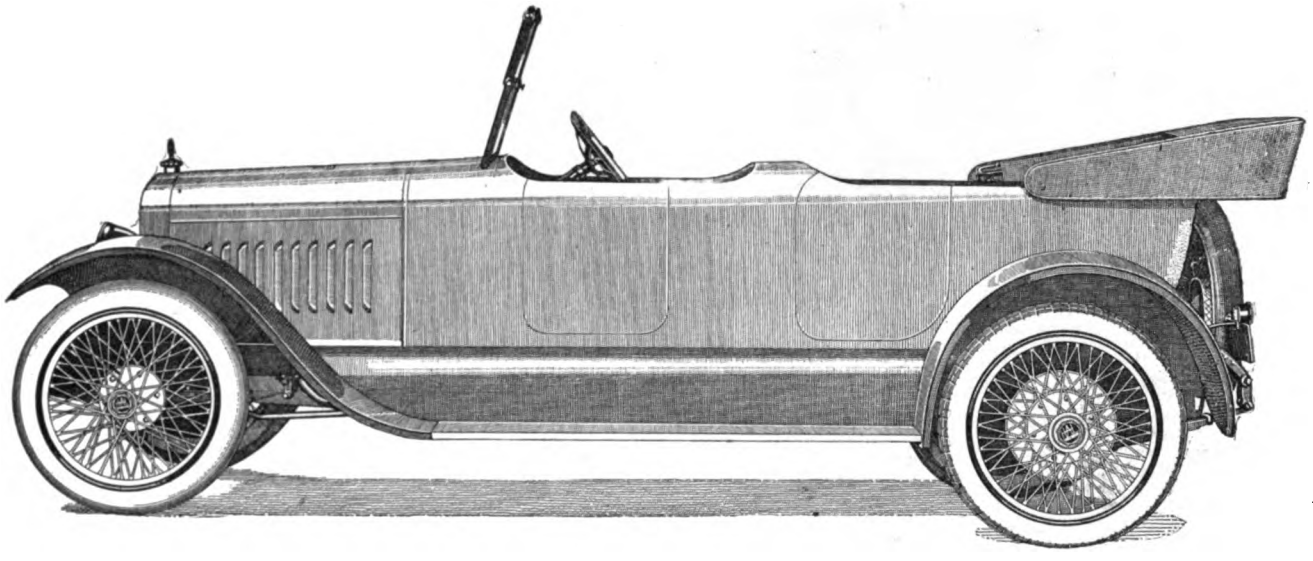
General Asbestos & Rubber Company

MAIN OFFICE AND FACTORIES: **CHARLESTON, S. C.**

BRANCHES: 58 Warren St., New York; 311 Water St., Pittsburgh, Pa.; 530 Golden Gate Ave., San Francisco, Cal.



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The Hal Twelve

Gasoline consumption is low for a car of such power, averaging 10 to 13 miles to a gallon. The consumption of oil, too, is low. Multiplication of cylinders, with valve-in-head type construction, means something more than great smoothness, great power and wonderful activity. It means unexpected economy.

Hal Motor Car Company, Cleveland, Ohio

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The Two Things Most Desirable to the Dealer Selling Tires

Naturally, profit is the first consideration. But profit, however large, on a sale that does not make a satisfied customer, is not good business.

If it can be demonstrated to you that you can handle Empire Tires at a better profit to you than any tire in its class, and sell them at a price that will insure lower mileage cost to the automobilist, would you be interested? We can show just those two desirable points. There isn't a better proposition in the whole tire field than

Empire Tires

It's worth money to be the "Empire man" in your locality.

Besides giving you more profit, every Empire Tire advertises you and brings you more trade. Empire Red Tires are adjusted on the 5,000-mile basis; Empire Gray Tires on the 4,000-mile basis.

Our advertising runs in leading newspapers and magazines. Ask us to prove to you the greater dealer profit and the lower mileage cost. We have started a campaign for a few more dealers. We will protect you in a territory not now occupied. Write or wire.

EMPIRE TIRE AND RUBBER CORPORATION
Home Office and Factory, Trenton, N. J.

BRANCHES AND AGENCIES:

New York City	Philadelphia	Pittsburgh	Los Angeles	Minneapolis
Boston	Buffalo	Chicago	Detroit	Newark

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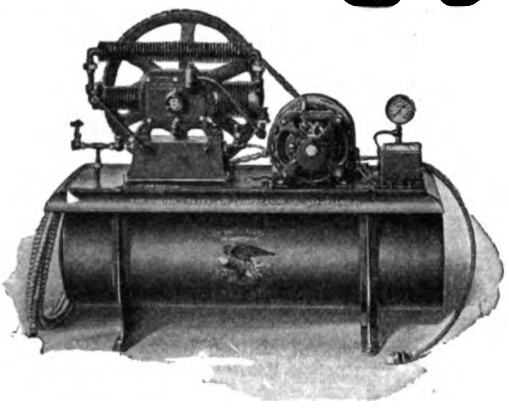
U·S· TWO-STAGE AIR COMPRESSOR U·S·

Consider the 14 Advantages of U. S. Two Stage Air Outfits and You Will Buy No Other

THERE are many different air compressors manufactured but one stands out boldly from the mass because refined and improved in 14 important details, making it beyond comparison with others.

The time was when it was commonly said "an air compressor is an air compressor" but this opinion is now exploded because the United States Two Stage Air Compressor has been on the market sufficiently long to demonstrate its superiority beyond question.

The design and safeguards incorporated in this machine are quickly recognized as highly practical and valuable, particularly by those familiar with common practice in air compressor design and the difficulties resulting therefrom.



H-34 DeLuxe, the Finest Ever Produced.



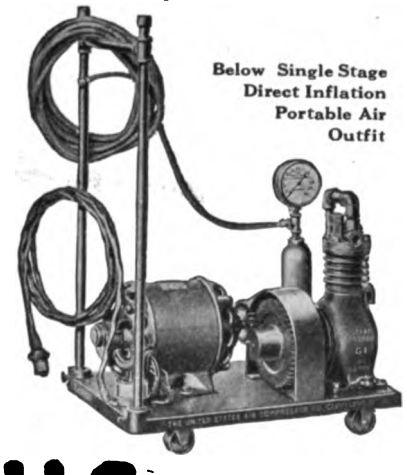
A Portable Two Stage Outfit.

JOBBERS, ATTENTION!

We are desirous of hearing from Jobbers, in position to push this line, to whom we can make an attractive proposition.



Self-Contained Single Stage Air Compressor Outfit.



Below Single Stage Direct Inflation Portable Air Outfit

One of the 14 improvements is the Intermediate Starting Tank which permits compressor to start against no pressure, thereby eliminating the cause of burned out motors. Another and vitally important one is the two-stage feature, which permits the compressor to maintain higher efficiency with less mechanical effort and contributes to the quietness and long life of the outfit.

But every garage man will want to obtain the complete facts about the superior outfit. Our new literature explains them in the most complete and understandable manner. Send for it.

GET THE FACTS

Fill in and mail the attached coupon, provided for your convenience and we will promptly mail complete information.

SEE OUR EXHIBIT AT AUTO SHOW
Boston, Mechanics Bldg., March 1-10th

THE SINGLE STAGE OUTFITS

To meet the demand for smaller outfits, of lower pressure than our Two Stage Compressors, we have developed a line of single stage air compressors.

These outfits do not contain all the features of our Two Stage Air Compressors but conform to the high standard of quality or material and workmanship adhered to in all United States Products.

We recommend them as the most efficient single stage compressors on the market. A circular is published showing this complete line.

U. S. Air Compressor Co.
Cleveland, O.

Please send us your literature as mentioned in the

Name .....
Address .....
City .....
My Jobber is .....
Date .....

U·S· THE UNITED STATES AIR COMPRESSOR CO U·S·

CARNEGIE AVE., CLEVELAND, OHIO.

When writing advertisers please mention Motor World

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Save Shoe Leather!

Conserve America's Dwindling Supply for Its Most Valuable Use!

The world faces a leather famine.

Tremendous war demand, diminished imports, and decreasing supply of cattle have combined to make leather of all grades scarce and precious.

Shoe manufacturers predict that without quick relief 1917 leather shoes of good grade will retail at $15.00 to $20.00 a pair; already prices are up 50% to 100%. Sole leather has already sold for more than one dollar a pound.

The Government is supplying our Navy with shoes having soles made of a leather substitute, and is experimenting with the tanning of sharks' hides to help relieve the leather situation.

How Motorists Can Help a Lot

The largest leather consuming industry is the shoe business. The second largest is the automobile business. The leather required to upholster the average touring car is enough to make the uppers of three dozen pairs of shoes. The grain leather used on expensive cars makes the best shoe leather. Its increasing scarcity has necessitated large use of split leather in shoe making. The latter is the grade used most in the automobile industry.

The motor-car buyers of America must decide which they will do without—**leather in shoes or leather in automobiles.**

Du Pont Fabrikoid, Motor Quality, offers the best solution of the problem.

This remarkably successful substitute for leather is already used for automobile upholstery more than all other materials combined. While not yet equal to grain leather, it surpasses split leather for upholstery purposes.

Those automobile makers still using split leather admit, to us, that it is inferior to Motor Quality Fabrikoid, but hesitate to adopt it for fear some buyers will still think split leather (commonly advertised "genuine leather") is better. They will gladly adopt Motor Quality Fabrikoid, and thereby greatly conserve the dwindling supply of shoe leather, if you will help.

When buying an automobile tell the dealer you prefer Du Pont Fabrikoid, Motor Quality upholstery. Many dealers in popular makes can and will tell you their cars are so upholstered. Dealers in other cars can get Fabrikoid upholstery if buyers ask for it.

Other Ways in Which

FABRIKOID

is Relieving the Leather Market

For upholstering furniture, buggies and boats.

For covering books (used by Government Printing Office and hundreds of America's largest binderies).

For making and lining suit-cases, satchels, handbags, etc.

For glove gauntlets, sanitary hat sweats, boxes, toys and novelties.

For sock linings, facings and tongues of shoes.

For bathing shoes and slippers.



Write Us for Names of Makers Now Using It

If you manufacture any article using leather, ask us if we have a grade of Fabrikoid suitable for your work.

Du Pont Fabrikoid Company

Wilmington, Del. **Toronto, Ont.**

Works at Newburgh, N. Y., and Toronto, Ont.

World's Largest Makers of Leather Substitutes

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Three Acme Worm Drive Models
1-Ton 2-Ton 3½-Ton

First Cost
Low
After Cost
Lowest



ACME
THE TRUCK OF PROVED UNITS

Sell the Truck Your "Prospects" Know!

Here is the big, powerful Acme—the greatest business builder—the truck that practically sells itself. Every "prospect" knows that Acme proved units mean supreme service in every field in which trucks are used. Continental motor, Timken axles, bearings and worm drive, etc.—these are the proved units that every truck user or prospective user is certain about. He knows they certify service!

You May Yet Profit by Our Bigger-Business Plan for Dealers!

The new Acme dealer plan may yet be open in your territory. Keenest motor merchants who now know the tremendous sales strength of our special offer were quick to see its dollar-saving worth. They know it's no ordinary agency proposition, but a big, definite offer that **makes sales quicker—reduces expense—increases profits.**

Rush your request for details of this plan. Know what it means to you. Know why alert dealers are quick to take advantage of it.

Acme trucks are sure sales makers. Proved units and Acme over-size construction, plus the giant strength of Acme factory co-operation and our great dealer plan, mean bigger, quicker profits from the start. **ACT NOW!** to know if this immediate opportunity is yet open in your territory.

CADILLAC AUTO TRUCK CO.
12 Mitchell Street
CADILLAC MICHIGAN

Rush This Coupon for Plan Details

Cadillac Auto Truck Co.
12 Mitchell St., Cadillac, Mich.

Please send your book illustrating and describing ACME Trucks and their proved units; also, furnish performance facts secured from owners showing gas economy, low upkeep, etc. Interested in.....

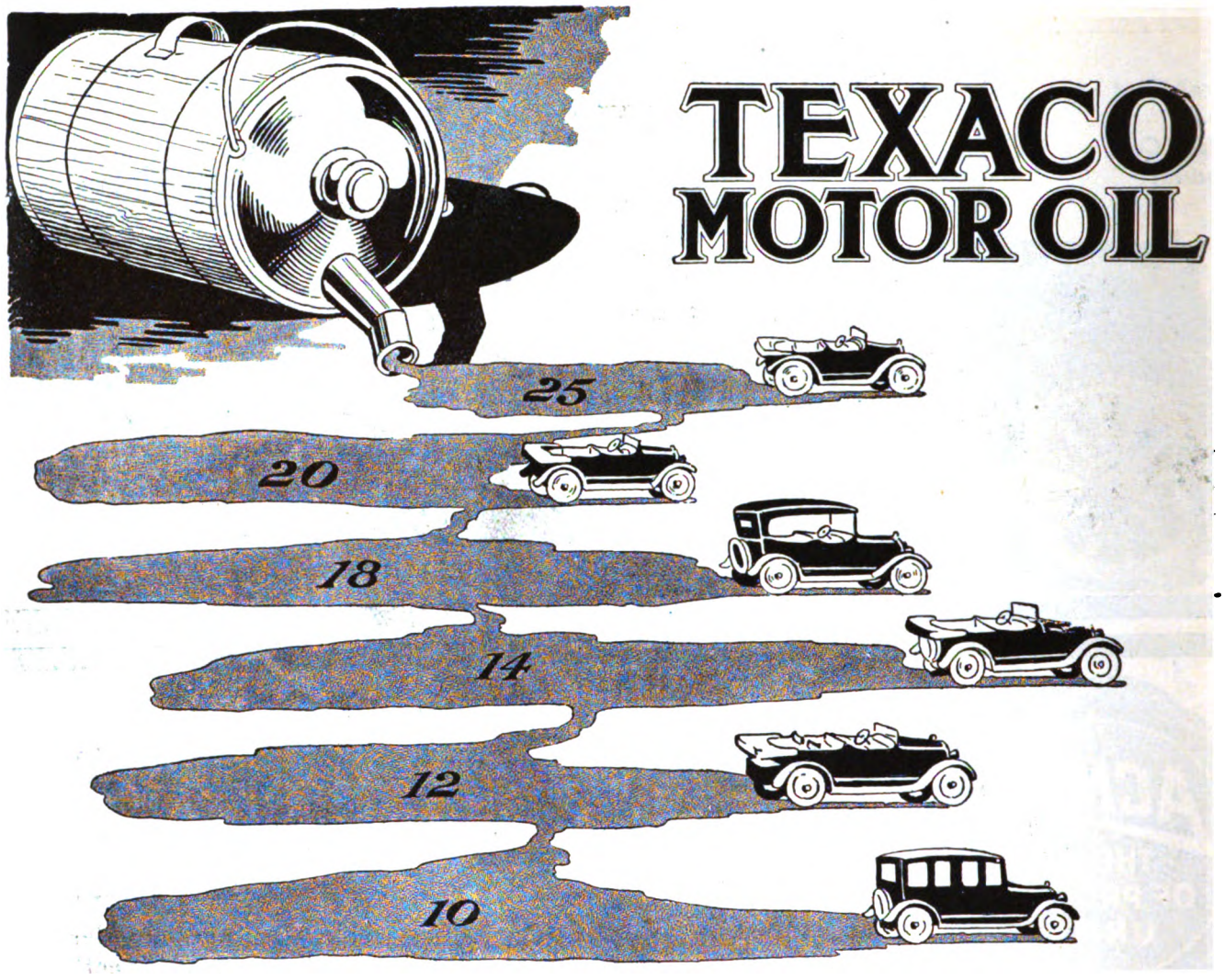
ton capacity. Now using.....

Name .....

Address .....

BUSINESS .....

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What Mileage Do You Get?

Of course, the mileage you obtain from a gallon of gasoline or quart of oil depends very largely upon the horse-power and weight of the car you drive. But not only does the car play an important part in the matter, so also do the gasoline and the lubricant—and they must bear their share of the responsibility for results.

This applies especially to the lubricant. You may use good gasoline in a good car and not obtain satisfactory mileage because you are not using the highest quality of motor oil obtainable.

In this connection you can do no better than pin your faith to Texaco Motor Oil. It is a most economical oil to use. It is a trouble saving oil.

Texaco Motor Oil is a southern oil with an asphaltic base. It is admitted by the most eminent authorities that the hydrocarbons composing the asphaltic base oils *cannot* form hard carbon. You who have had hard carbon cut and score piston rings, cylinder walls, and valves, know what this means.

Texaco Motor Oil stands up well in use because it gives a good seal to the piston and rings and prevents leakage of gasoline into the crank case.

Because of these facts Texaco Motor Oil enables a motor to run at its highest point of efficiency, enables the gasoline to deliver its maximum power, and as a result gives high mileage.

You can judge a motor oil very fairly by its color. Compare Texaco with others. Note its clear, clean color—the blue shade that appears when it is held to the light.

When you buy motor oil buy Texaco. The best way, the safest way, is in 1 or 5 gallon cans.

THE TEXAS COMPANY
17 Battery Place . . New York

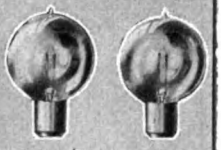


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Our Reputation is *Your* Guarantee

VERSAL PRODUCTS
FOR THE
UNIVERSAL CAR
DETROIT STARTER COMPANY
DETROIT, U.S.A.

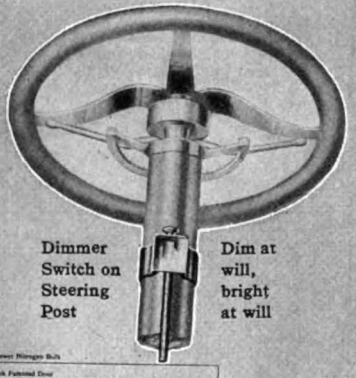

Electric Tail Lamp


Extra 24 c. p. Nitrogen Bulbs

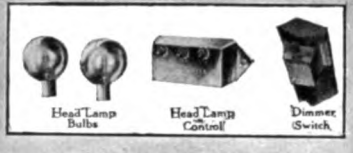


Head Lamp Control


Spotlight

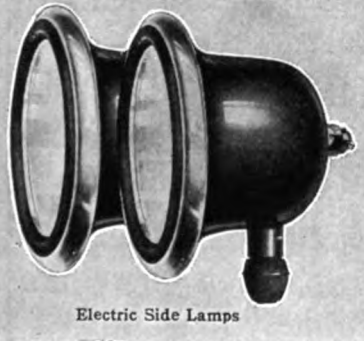

Dimmer Switch on Steering Post

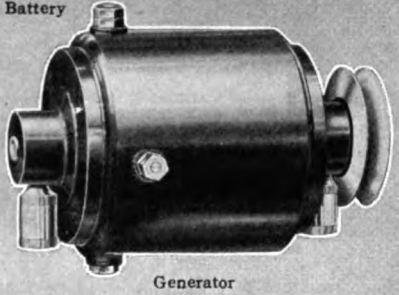
Dim at will, bright at will

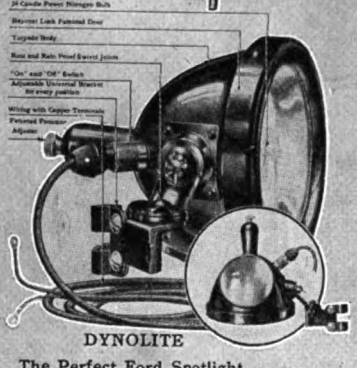



Storage Battery


Regulator


Electric Side Lamps


Generator


DYNOLITE
The Perfect Ford Spotlight

Genolite Type C *and* D ▽ Constolite — Dynolite

Genolite *Type "C"* $29.85

An improved electric lighting system for lighting all five lamps, heads, sides and tail — gives brilliant light from storage battery in both side and tail lamps (which we furnish) irrespective of whether motor is running or idle. Provides also two nitrogen head-light bulbs lighted through patented regulating device which governs flow of current taken from magneto, giving more constant light at low engine speeds and can be dimmed at will at high speeds. Installed in two hours.

Genolite *Type "D"* $31.85

Includes the following — a storage battery — a generator with "cut out" which automatically charges the battery — two beautiful side lamps with bulbs — one high grade tail lamp with bulb — one high grade windshield spotlight with bulb — one coil box for automatically regulating spotlight — which also automatically dims headlight. Together with necessary wires, brackets — absolutely complete, ready for installation. No extras needed. Installed in two hours.

Dynolite $6.85

A powerful windshield spotlight designed exclusively for Ford cars. Cannot be excelled for the quality of material throughout, its many exclusive features and the exceptional power and brilliancy of its light. Operates off magneto through patented regulator which automatically delivers current at the proper voltage, keeping light constant in power irrespective of motor speed. Only two terminal connections to make installation.

Constolite $4.85

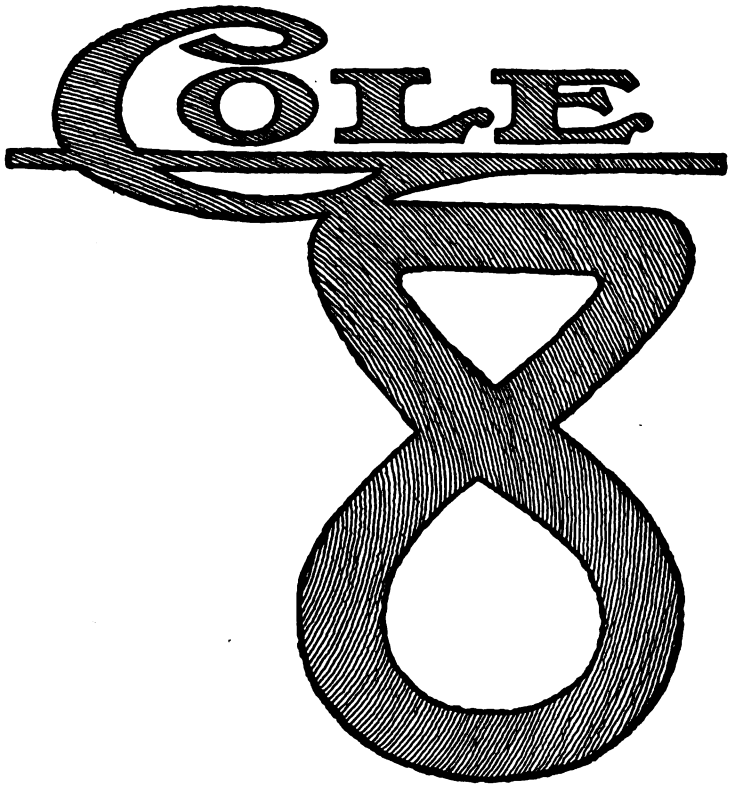
Gives a full driving light at practically all speeds — light in both head lamps at all times. Wired in multiple to prevent burning out — dimmer switch conveniently located on steering post — an exclusive feature found in no other device control. All wires, two extra bulbs, and dimmer switch provided. Installed in few minutes.

DEALERS! This is the greatest sales producing accessory of the year. Write for particulars. Dept. II

Perfect Electric Lighting *for* Ford Cars

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Stronger Than Ever



Today the Cole Eight is a more pronounced leader than ever before.

Production of this wonderful car is not only 200% greater than at this time last year,

—but even this increased production does not meet the rapidly growing demand.

Such great popularity can be credited solely to Cole Eight performance.

No car built excels the Cole Eight in power, smoothness, and sterling dependability.

No other Eight has been produced to approach the Cole in actual miles per gallon of gas and oil or in point of tire economy.

It is the largest Eight built—yet relatively the lightest. This unusual combination gives greater economy of operation than many Sixes.

In every respect—action, appearance, and riding ease—the Cole Eight is a wonder car.

Prices

Seven Passenger Cole-Springfield Toursedan	$2295
Four Passenger Cole-Springfield Tourcoupé	$2295
Seven Passenger Cole Eight Touring Car	$1695
Four Passenger Cole Eight Roadster	$1695

Prices f. o. b. factory

Cole Motor Car Co.
Indianapolis, U. S. A.

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The Remarkable Story of a Wonderful New Headlight Lens

How a crooked windshield gave birth to the idea that resulted in producing a headlight lens that gives 26% more light and at the same time cuts out all glare without the use of a dimmer.

By John S. Perry



Up in Massachusetts, some time ago, a man was driving a machine on a country road. His windshield was at a peculiar angle. Along came a car in the opposite direction, its headlights glaring like the searchlight of a battleship. Whizz—and she was by!

This man at the time knew little about the science of optics, he knew little about the properties of light, about prisms, lenses, and so forth. He was just a plain, keen New Englander, who kept his eyes open and noticed things. And on *this* occasion he noticed that despite the blinding glare from the other car, the angle at which his own windshield lay *had somehow deflected the glare from his eyes.*

The thing set him thinking. He studied the matter pretty thoroughly. He secured the assistance of a noted optical expert and one of the best illuminating engineers in the country. And the result was—a remarkable multiple-prism headlight lens was finally perfected that actually throws no glare, and yet gives 26 per cent more light.

What this means no automobilist need be told. Every man who has driven a car *at night* knows only too well.



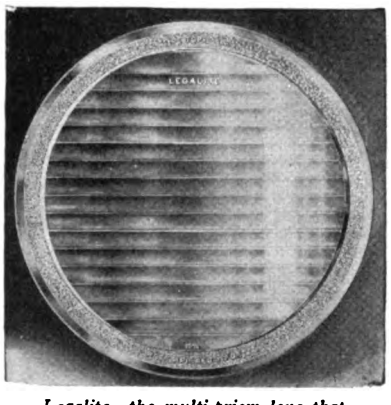


Why 26 Per Cent More Light—No Glare

The reason for the increased illumination from the Legalite lens is that the light-rays are not *diffused.* Every bit of light given by the lamp is utilized *on the road.*

The *three* distinct types of prisms deflect the beams of light outward and downward at the same time, spreading a carpet of light across the road, never rising more than 3½ feet above the ground—*at any distance from the car.*

Yet because of the peculiar *prism* construction there is no glare! You can look squarely into a Legalite headlight without blinking an eyelid.



Legalite—the multi-prism lens that deflects all the light on the road.

Pretty Cheap Insurance

No doubt you carry "liability insurance." If, through carrying a dimmed or glaring headlight, you unfortunately kill a fellow-creature—or maim him for life—it is true you may be absolved from paying damages.

But it would be a pretty unpleasant experience to ponder over later on. The Legalite lens provides insurance against such happenings—happenings that are not infrequent, as you can see by glancing at any Monday-morning newspaper.

Up until now you may never have had a night accident, and you may therefore feel less keenly the need for such a lens as the Legalite. But, remember, there must be some fire where there's so much smoke. The fact that so many States and cities have legislated against the glaring headlight is in itself proof how many hundreds of accidents have occurred from this cause in the past.

Legalite really provides "daylight conditions for night driving." It minimizes as much as possible the risk involved in driving after dark.

Equip Your Car

You know what "headlight" troubles are. You know how shaky it makes you feel to drive at night with a glaring headlight, or one too "dim" to light your road. You know how always, in the back of your head, you expect some terrible accident driving at night, just because of the "headlight" problem.

Well, why not test Legalite Lenses — as thousands of other motorists have done? See whether they give ideal illumination of the road—up hill or down grade or on level stretches. See how Legalite stops the clouding of your own vision. See how it stops the danger of accident by not blinding other drivers and pedestrians. See what a sense of security it gives you—how it frees you, with reason, from the constant overhanging fear of accident.

It's better to be safe than sorry—Be safe—equip your car with Legalite!

PRICES

Sizes 7¾ to 8⅝ ..... $2.75 per pair.
Sizes 8⅝ to 9⅝ ..... $3.50 per pair.
Sizes 9¾ to 11⅛ ..... $4.50 per pair.

Our booklet "Daylight Conditions for Night Driving" will be mailed on request.

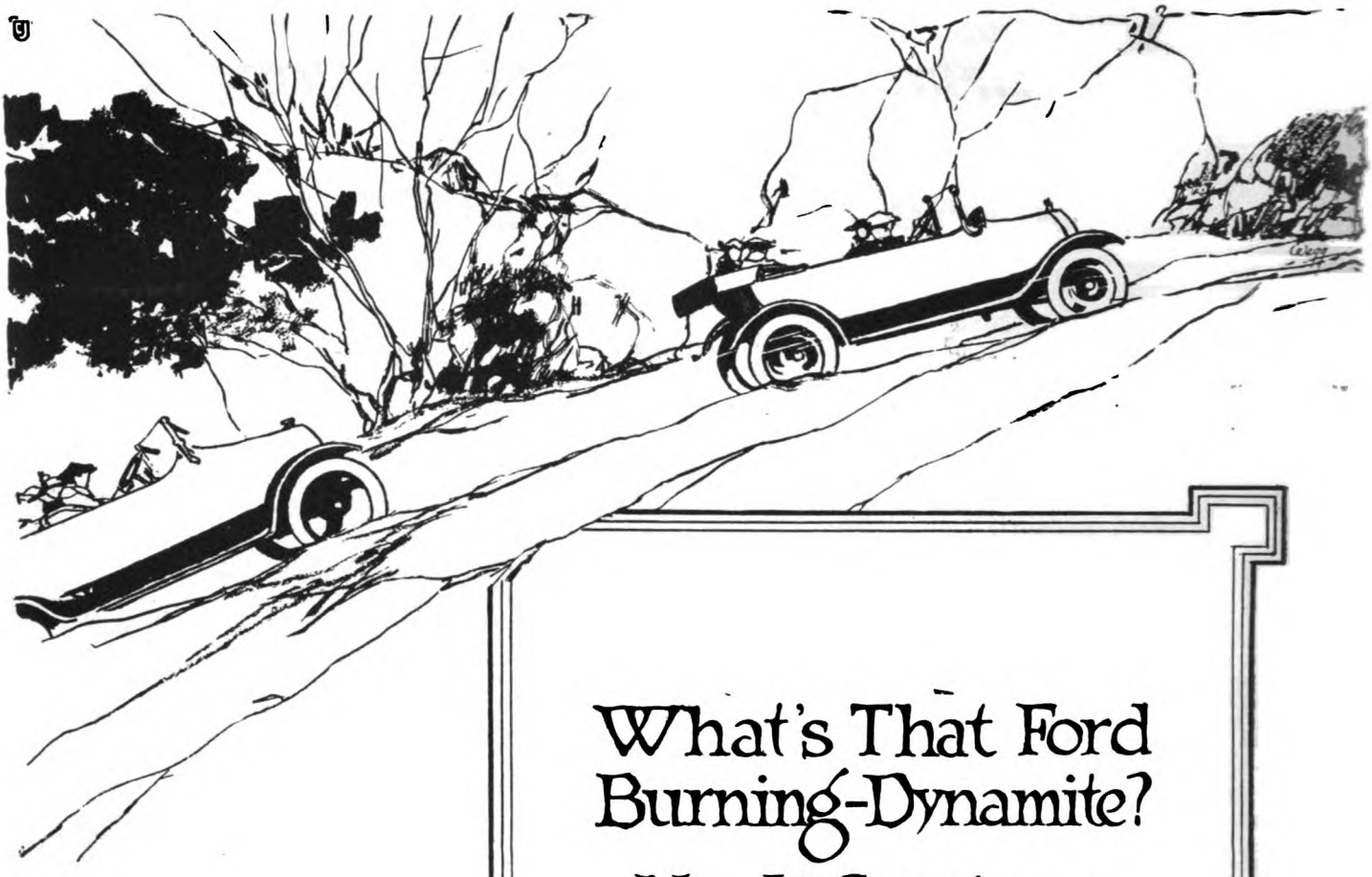
LEGALITE CORPORATION

Dept. 12, 120 Boylston Street
Boston, Mass.

Factory Representatives

For Texas, Louisiana, Oklahoma, Dan N. Bell, 203 Dennis Avenue, Houston, Tex. For Ohio, Newton & Brinker, 40 North High Street, Columbus, Ohio. For Pacific Coast, Mitchell Mfg. Co., 210 Balboa Building, San Francisco, Cal. For West Virginia, Frank P. Swan, Huntington, W. Va. For Middle West, Charles S. Monson, 211 Dime Bank Building, Detroit, Mich.

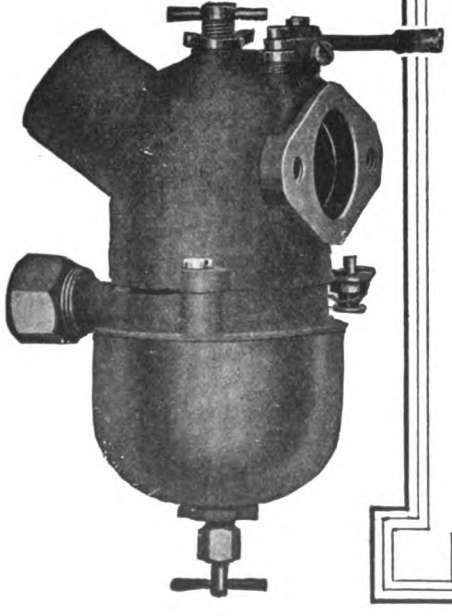
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What's That Ford Burning-Dynamite?

No. It Carries a

JOHNSON CARBURETOR



You'll Never Catch Him Till You Put One On Your Car

A Winter Business Aid for Dealers

JOHNSON COMPANY
Makers of Superfine Instruments of Carburetion
DETROIT , , MICHIGAN

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"Built and Sold for . . . Everlasting Service."

D-E

DAY-ELDER MOTORS CORP. D WORM DRIVE E NEWARK N J U S A

WORM DRIVE MOTOR TRUCKS

The Greatest Truck Proposition in America!

¾-Ton $975. 1-Ton $1250. 1½-Ton $1500. 2½-Ton $2000

Investigate the proposition in detail; go over their remarkable specifications carefully—and the conviction will be forced home on you that nowhere in the United States is there a line of trucks of such dominating superiority for the money, or trucks that offer greater selling possibilities.

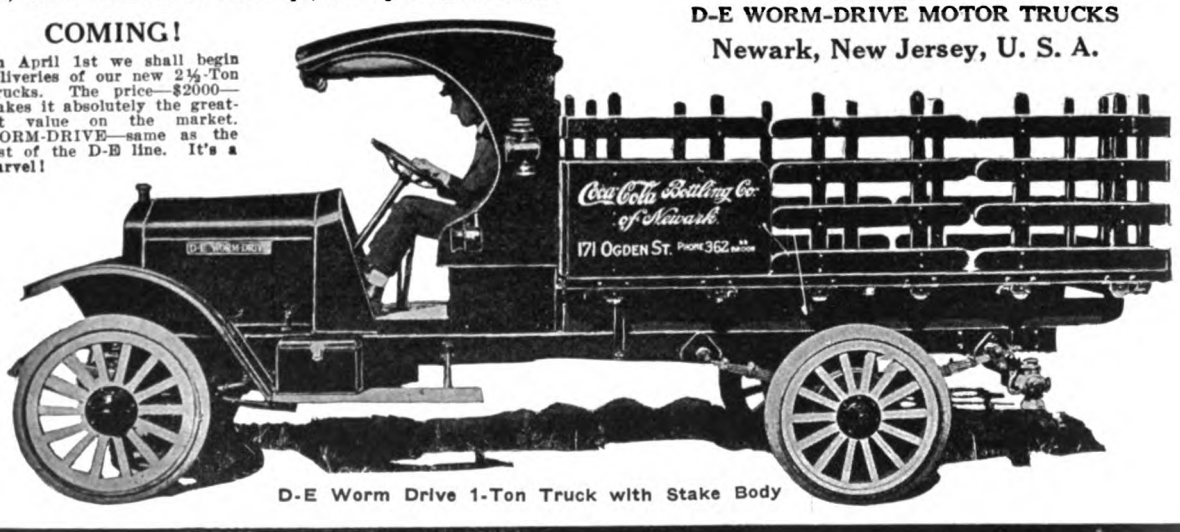
You'll find, first of all, the huskiest frames you ever saw in trucks of D-E sizes—sturdy pressed steel, fabricated in unusually large sizes. But wait till you see the MASSIVE WORM-DRIVE rear axles! And the MOTORS! They are CONTINENTALS—except in the ¾-Ton—typical TRUCK motors. And so on, from radiator to hub caps, are specifications that sound incredible at these prices! No wonder dealers are so enthusiastic, for they are the easiest and fastest-selling Trucks ever produced. Write or wire us for complete specifications and dealer proposition.

GENERAL SALES OFFICES
1457 Broadway, New York
P. K. Hexter, Sales Manager

DAY-ELDER MOTORS CORP.
Manufacturers of
D-E WORM-DRIVE MOTOR TRUCKS
Newark, New Jersey, U. S. A.

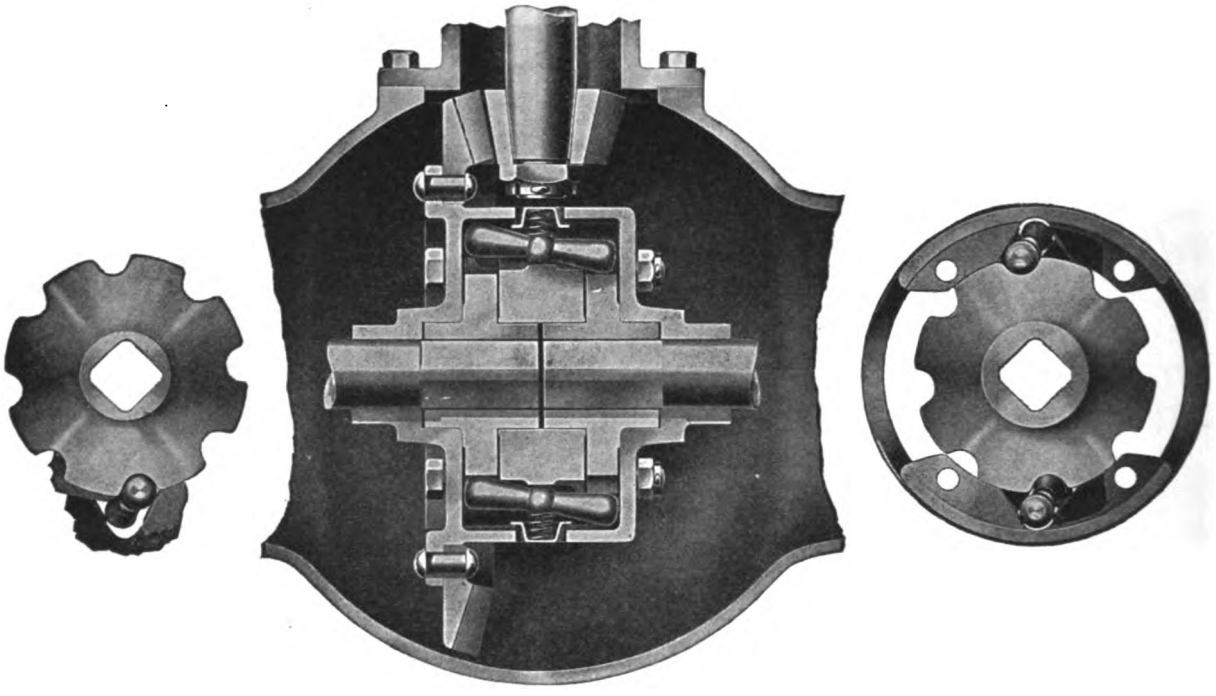
COMING!

On April 1st we shall begin deliveries of our new 2½-Ton Trucks. The price—$2000—makes it absolutely the greatest value on the market. WORM-DRIVE—same as the rest of the D-E line. It's a marvel!



D-E Worm Drive 1-Ton Truck with Stake Body

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Begin Your Experimental Work for 1918 Improvements by Trying

THE NEW PROCESS DIFFERENTIAL

Gives Positive Traction and Requires No Change in Housing or Bearing Layout

Send for a New Process Differential and put it into your testing car.

Drive it through mud, slush, snow, sand and over wet asphalt, and you will find a steady straight forward pull that keeps the car moving ahead *with all wheels in line.*

You will find the compensation perfect in turning corners, and on straightaway you will *not* have the wheel spinning, sidesway and skidding that always accompany an ordinary geared differential.

Our extensive plant permits us to meet the quantity requirements of any builder, and we stand ready to back this Gearless Differential with every reasonable performance guarantee.

Safety, confidence and comfort of owners in your 1918 cars demand that you start your investigations soon.

Licensed under patents of the
Gearless Differential Company of Detroit, Mich.

N.P.R.H. REG U.S. PAT. OFF.

NEW PROCESS GEAR CORPORATION

SYRACUSE, N.Y.

132

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Simply Attach the Hose— Throw the Lever, and Get

Pure Air—Quick

Special and Standard Equipment

FOR

Abbott-Detroit	Monarch
Apperson	Moon
Auburn	National
Buick	Oakland
Cadillac	Oldsmobile
Carter Car	Overland
Case	Packard
Chalmers	Paige-Detroit
Chandler	Pathfinder
Cole	Paterson
Davis	Pilot
Empire	Premier
Haynes	Reo
Hudson	Ross
Hupmobile	Simplex
Jackson	Standard Steel
Jeffery	Stearns
King	Studebaker
Kissell	Stutz
Lexington	Sun
Lozier	Velie
Madison	Westcott
Marion	Yale
Marmon	

Watch This List GROW

Not only convenient for the motor car owner, but also important as the best method of proper tire inflation.

Those are reasons for this big list of special and standard equipment.

Every car dealer appreciates the importance of the KELLOGG Engine-Driven Tire Pump Equipment.

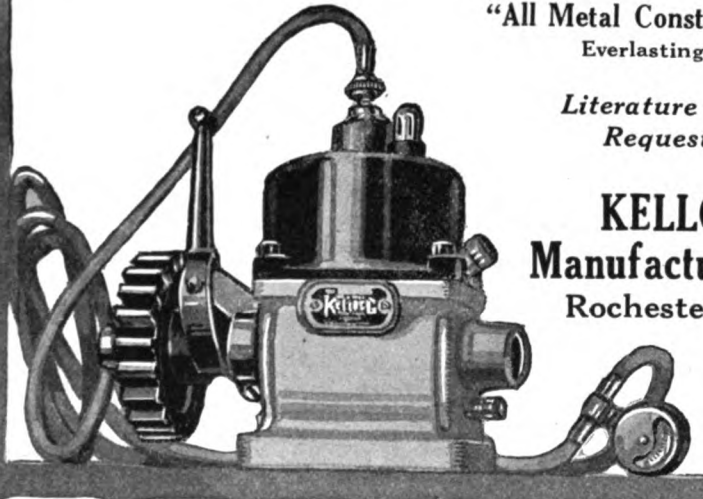
"Perfect Attachment Fittings"
Easy Installation

"No Oil Spray With the Air"
Guaranteed

"All Metal Construction"
Everlasting

Literature on Request

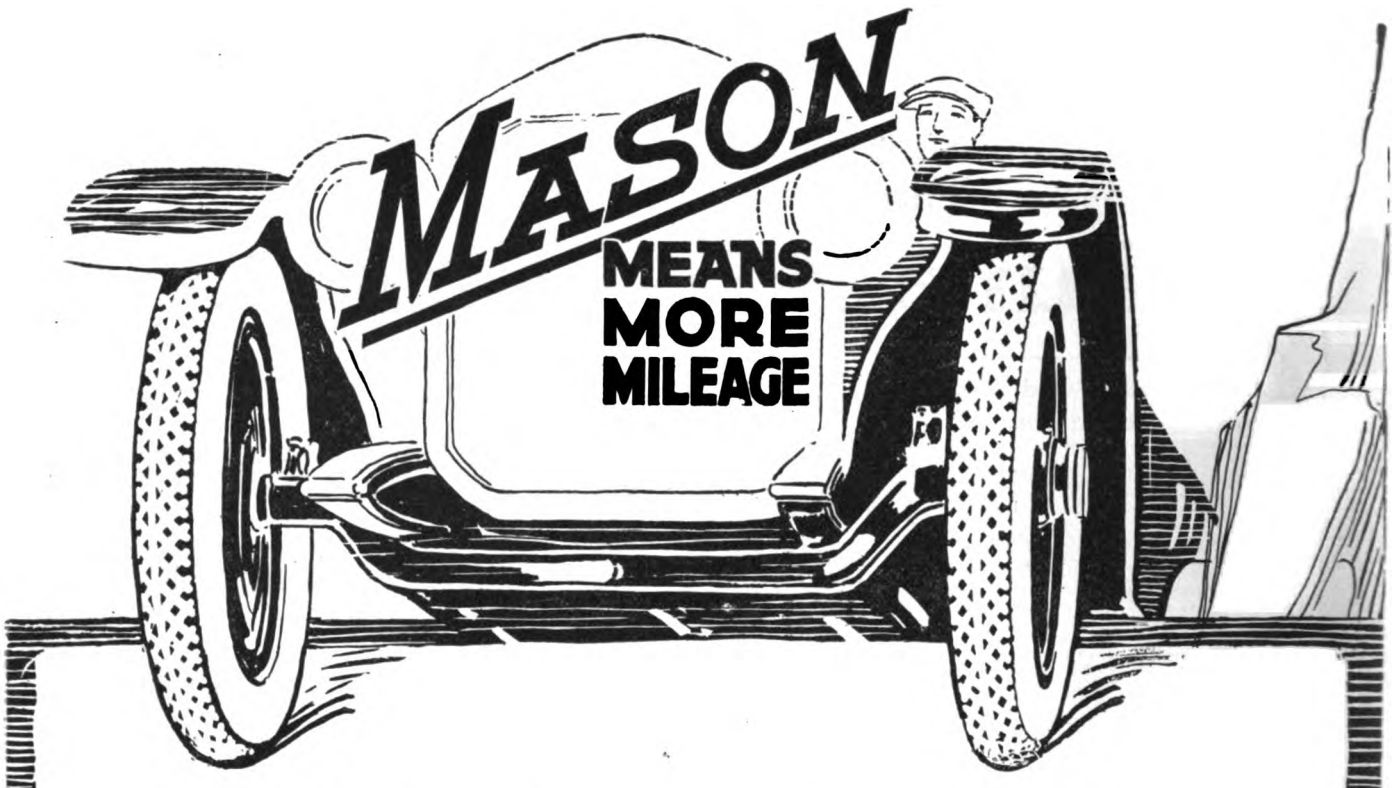
KELLOGG Manufacturing Co.
Rochester, N. Y.





KELLOGG Engine Driven Tire Pump

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Sturdy Quality at a Popular Price

This is the MASON story in a nutshell. MASON Tires have all the sturdiness that fine materials and skilled craftsmen can weld into the serviceable qualities that the year-in-and-year-out motorist demands.

Wherever you find MASON Tires, you find car owners thoroughly satisfied with their tire values. More—you find dealers so enthusiastic over MASON merits that they're conscientiously recommending MASON as the tire that lives up to its slogan.

You should be well acquainted with the MASON plan—you'll find it well worth while to learn something of it.

MASON is establishing its distribution firmly—a few territories that are still open offer broad opportunities.

MASON Tire and Rubber Company
Factory, Kent, Ohio

Akron suburb

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Write for Exclusive Agency Proposition —TODAY



TIRE equipped with MAXOTIRE which has run thousands of miles after it ordinarily would have been thrown away. This extra mileage is just like money in the bank. The MAXOTIRE is still as good as new.

DEALERS

Your customers can get the *full wear* from their tires by using

MAXOTIRES

There is no other accessory that sells so easily and that gives better satisfaction. Since the price of tires has advanced, every auto owner is looking for something to make his tires last. There are bigger profits in selling MAXOTIRES than new tires.

MAXOTIRES are sold only to one dealer in each town. All inquiries whether from other dealers or consumers are referred to him.

MAXOTIRES are not sold thru jobbers or cut-rate supply houses. The consumer can get them only from our agency in each town.

Our advertising brings the customers to you. There is nothing else like the MAXOTIRE on the market.

Write for free catalog containing full information. Make us show you why you should sell MAXOTIRES.

K & W RUBBER CO. 3rd Street Ashland, Ohio

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Make Money Selling This Popular Accessory

Over 100,000 of these wonderful vulcanizers sold last year with scarcely any advertising. The demand is tremendous Every motorist wants the

SHALER 5-MINUTE VULCANIZER

Manufactured under Low & Miles Patent

It gives you a liberal profit on the first sale and brings customers back into your store for supplies for use on the road.

We are just starting a large advertising campaign that will send customers to your store. Motor car owners know the Shaler and call for it by name. Get your share of the profits from this advertising.

Every Shaler user praises this handy outfit because it works so easily and safely and because it saves tire money.

No car is equipped with a vulcanizer, and your customers are going to buy the Shaler from some dealer.

That dealer can be you!

Write today for our new Catalog, dealer's discounts and terms, or

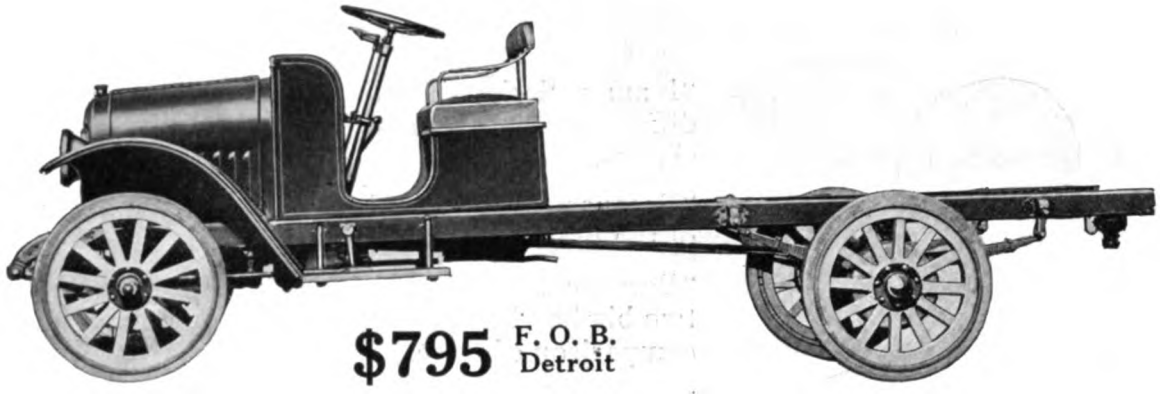
Ask Your Jobber's Salesman About It

C. A. SHALER CO., 404 Fourth Street, WAUPUN, WIS., U. S. A.

When writing advertisers please mention Motor World

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Maxwell
One-Ton Truck



$795 F. O. B. Detroit

Arouses Unusual Interest at Chicago Auto Show

Orders received for more than 5,000

The new Maxwell One-Ton Truck was on display at our headquarters, Blackstone Hotel, during the week of the Chicago Show.

We knew this new Maxwell product would hold the attention of many dealers who realize the immense field for a truck of this character, size and price.

But we underestimated, not only the great number of Maxwell dealers who would visit and inspect this truck—but the scores of other dealers—and the sincere, enthusiastic interest that they all felt.

We are now, more than ever, convinced that the Maxwell Truck is going to have a nation-wide popularity that will tax even our enormous manufacturing facilities.

We expect to start deliveries in 60 days and if you were unable to attend the Chicago Show—or if you were there and could not make a satisfactory examination of the Maxwell Truck—we suggest that you get into communication with us at once.

We have printed matter giving all details of our truck. And in certain localities we can contract with the right sort of dealers.

Specifications

Standard Body Prices

Box Body with Cab and Windshield	$75.00
Covered Express Body with integral cab and side curtains	100.00
Panel Body with integral cab	100.00

All prices F. O. B. Factory.

Brief Description

Four-cylinder engine, cast in block, powerful and economical; three-speed transmission; gears made of heat-treated alloy steel. Worm drive, using Timken-David Brown worm and gear embodied in rear axle. Axles of heavy construction with Timken roller bearings throughout. Frame of pressed steel with heavy cross members. Extra long springs made of special spring steel. Sturdy wood wheels with steel rims. Two sets of brakes acting on rear wheels. Heat-treated alloy steels used in all vital parts, providing a margin of strength and durability adequate to insure good service and long life. Remarkable economy in fuel consumption, tire expense and maintenance cost is assured.

The regular chassis equipment includes front fenders; solid tires, 32 x 3 inches front and 32 x 4 inches rear; electric headlights and tail light; electric horn; generator and storage battery of 80-ampere-hour capacity; full set of tools. 34 x 4½-inch pneumatic tires with demountable rims on all four wheels, $30.00 extra.

Maxwell Motor Company, Inc.
Detroit, Michigan

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Why You Should Be A Scripps-Booth Dealer

Not theoretic selling talk but arguments straight from the firing line, are here quoted from a statement by one of Scripps-Booth's most successful distributors:



Ralph Hamlin
Scripps-Booth Distributor for Los Angeles and Southern California.

"I am a Scripps-Booth dealer because of the distinctly different appeal that Scripps-Booth makes to many classes.

"Because the Scripps-Booth stands alone as a conception of the light luxurious car idea.

"Because Scripps-Booth individuality sweeps aside the two big barriers to salesmanship—comparison of features. comparison of price.

"Because I have found that the Scripps-Booth design appeals to a large and varied class of men and women who are recognized as 'ready buyers.'

"I believe in the permanent development of the Scripps-Booth idea, not only because of its intrinsic worth, but because of the high standing of the company behind it.

"I believe in the competent personnel of its management, its liberal discount, and its fair dealings with its distributors.

"When the management took me into its confidence as to its plans of expansion through greater advertising and sales organization, I at once foresaw that Scripps-Booth dealership had become doubly desirable."

Apply these arguments on the ready-selling appeal of Scripps-Booth design to your own business.

Our plan of expansion may possibly open an opportunity in your territory.

If Ralph Hamlin's statement interests you, write for our prospectus on the advertising and sales expansion of the Scripps-Booth idea.

Scripps-Booth Corporation
Detroit. Mich.



Four-Cylinder Roadster	$935
Four-Cylinder Coupe	1450
Eight-Cylinder Four-Passenger	1285
Eight-Cylinder Town Car	2575

When writing advertisers please mention Motor World

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$1

Announcing the Spark Plug with the ONE INCH FIRING SURFACE

The 7 to 10 Fat Hot Sparks generated by these unique parallel electrodes produce a "rapid fire" propagation that assures FULL POWER to every motor. Complete combustion is absolutely assured and all possibility of the motor scavenging unburned gas is reduced to a minimum.

7 to 10 Hot, Fat Sparks!

The increasing cost of gasoline and its resultant tendency to slow, lazy ignition—necessitates a multi-spark, BIG POWER Spark Plug.

BERGIE National SPARK PLUGS

The BERGIE NATIONAL Spark Plug is designed to meet modern ignition demands. Its ONE INCH FIRING SURFACE is PATENTED. No other Plug can use it.

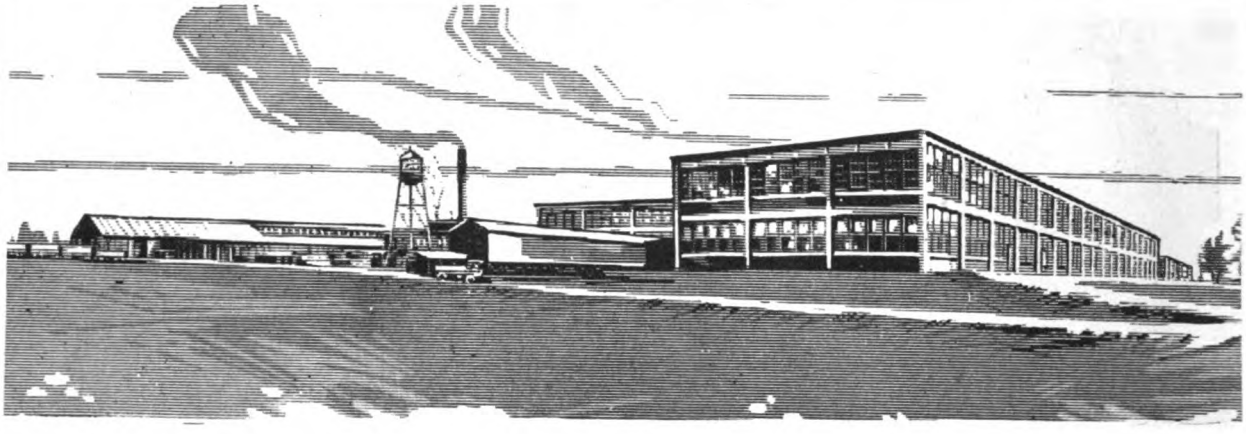
Guaranteed for 365 Days

against defective material, workmanship and ordinary breakage. Defective Plugs are replaced immediately upon receipt MINUS ARGUMENT. We have an exceptionally interesting proposition for the dealer and want high grade representatives everywhere.

Bergie National Spark Plug Co. Rockford, Ill.

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Leaders For Ten Years



Our 1916 business exceeded our expectations. Our present production will double during 1917. The Garford factory is already the largest plant in the world devoted exclusively to the manufacture of a complete line of motor trucks.

FOR a full decade The Garford has been a leader in the manufacture of motor trucks.

Every effort, every resource has been concentrated on that one purpose.

We have made a searching study of traffic conditions in all parts of the country.

We know what is required of a motor truck—and we have built a line of trucks that will meet those requirements—squarely, dependably and economically.

Garford Motor Trucks are perfectly adapted in design, power, strength and capacity to meet the most exacting demands of *any* business—no matter how large or how small it may be.

And this wonderful group of motor trucks has established an enviable reputation and a tremendous success for Garford.

Dealers are sharing in Garford success through the selling of Garford Motor Trucks.

If you too are interested, we have an attractive proposition to offer.

Write Dept. 104 for complete information

Garford MOTOR TRUCKS

The Garford Motor Truck Company, Lima, Ohio
Manufacturers of Motor Trucks of 1, 1½, 2, 3½, 5 and 6 ton capacity
4½, 7 and 10 ton Tractors
The Garford Road Builder
Distributors and Service Stations in all Large Cities

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OUR EXCLUSIVE PROCESS of ***tempering*** rubber was developed for the express purpose of supplying you with tires to make good on the worst roads—frozen, sleety, icy, snow-covered.

Tempering develops the resistant properties of rubber to the highest degree and adds the touch of perfection to Quaker Tires.

The *tempered* rubber tread is supported by the sturdiest "carcass" of specially-woven duck, the plies of fabric tenaciously gripped together with *tempered* rubber. And, remember, there are 5 to 7 plies—according to size—in Quaker Tires.

Quaker *plain* treads are ideal for use with chains, because of the wonderful durability, resiliency and elasticity of tempered rubber. The facility with which chains "creep" on the smooth-wearing, resistant *tempered* surface, and the lower cost of the plain style are additional considerations.

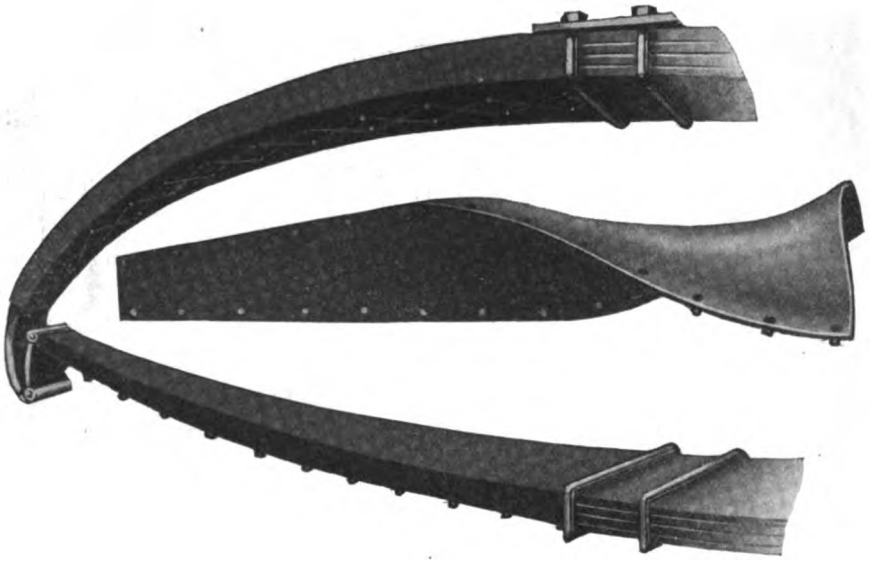
The Quaker T. T. T. tread is the highest development in the anti-skid type—scientific in every particular. Car owners, everywhere, use and indorse the T. T. T. because of its effectiveness and the greatly increased traction afforded.

The 1917 demand for Quaker Tires promises to be double that of even last year's phenomenal record. Car owners who have tried Quakers will accept no substitutes. If we are not represented in your territory, write for our money-making proposition. Dept. T-1.

Quaker City Rubber Co.

Philadelphia Factories: **Chicago** 182 W. Lake St. **Pittsburgh** 211 Wood St. **New York** 207 Fulton St.

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WOODWORTH

Spring Cover and Lubricator

SAVE YOUR SPRINGS AT LITTLE COST by using a Woodworth Spring Cover.

IN A FEW MINUTES, WITH LITTLE TROUBLE, you can lace it over your springs and save them from rust, dust, and breakage. The result is an easy-riding, constantly lubricated spring. The improvement in the riding of your car is remarkable. All squeaks are eliminated and the car rides as though equipped with a set of shock absorbers.

RUSTY, NEGLECTED SPRINGS ARE LIABLE TO BREAK, but even before then they are of little service as vibration-preventers.

A WOODWORTH SPRING COVER protects the spring, cuts rust already accumulated, and prevents the accumulation of more. It keeps the spring free from dust and mud, well oiled, and noiseless.

LOW IN PRICE, SIMPLY MADE OF STRONG LEATHER lined with felt wicking, it is a spring-saver and a trouble-saver, preserving the comfortable riding qualities of your car and saving you the expense of spring renewals.

Once saturated with oil, it will not require renewing for an entire year.

PRICES

Sizes	Genuine Leather	Imitation Leather
12 in. or less	$0.65	$0.30
12-14 in.	.90	.40
14-16 in.	1.10	.50
16-18 in.	1.30	.60
18-20 in.	1.50	.70
20-22 in.	1.70	.80
22-24 in.	1.90	.90
Over 24 in.	2.00	1.00

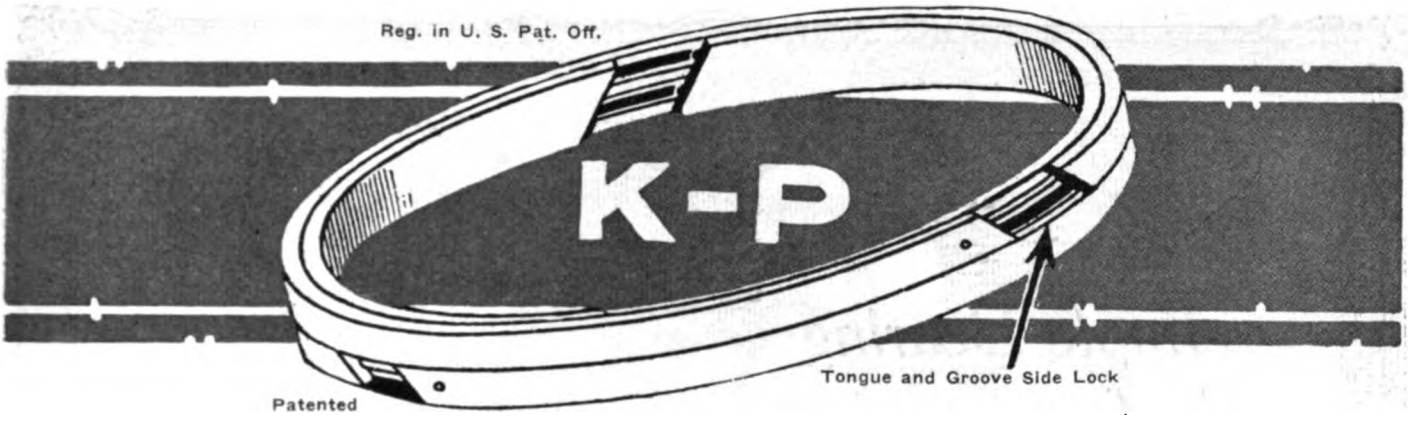
Made to fit all makes of cars. Dealers are handling these spring covers with profit and satisfaction. Customers appreciate being advised of this easy method of spring protection. Write for generous terms.

WOODWORTH MANUFACTURING CORPORATION

NIAGARA FALLS, NEW YORK

CANADIAN FACTORY, NIAGARA FALLS, ONTARIO

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EVERY ADDITION TO POWER PAYS

The most important factor in securing compression is the efficiency of the piston rings. And compression means power.

You would not find it difficult in any case to convince a man that it will pay him in increased power per gallon gasoline, if he has better piston rings installed.

But show him

K-P 3 PIECE PISTON RINGS

and explain their superior qualities and you will find he buys. Show him how they make an exceptionally close fit between the piston and the cylinder, which is essential to high compression. Show him that the obviation of the one-piece ring with its leaky split joint also develops compression.

Then let him see the splendid finish and efficient working of the ring. Show him how the groove or side lock between the two outer sections at once make it superior of all piston rings. Tell him how this groove, by holding down the end of the rings, eliminates all trouble from scored cylinders.

K-P 3 Piece Piston Rings are the rings you should push, because they are the best. They give satisfaction, and satisfaction builds your business.

KEYS PISTON RING CO.

3017 OLIVE STREET ST. LOUIS, MO.

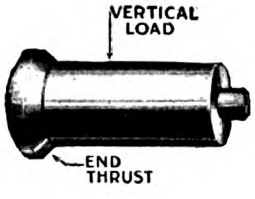
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BOWER SAVES POWER

Ample Bearing Surface

The straight rollers that are used in Bower Bearings have a maximum line contact which carries the vertical load. The flanged head has separate surfaces to care for horizontal stress and end thrust.

For these reasons Bower Bearings provide greater load-carrying capacity than any other bearing of equal dimensions.



BOWER
ROLLER BEARING CO.
Detroit-Michigan

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Questions and Answers

Question: Does it require a large amount of current to operate the Gear Shift?

Answer: No. The current used is less than that consumed in operating an electric horn. The C-H Magnetic Gear Shift connected to a 12 volt, 80 amp ere battery shifts gears 134,490 times without exhausting the battery. This is equivalent to shifting gears 100 times a day for four years.

Q.: Does the Gear Shift ever fail to work?

A.: No. We know of one man who has driven a big six cylinder, Gear Shift equipped car 20,000 miles and the Gear Shift has never failed to work.

Q.: What would happen if it failed to work?

A.: It never has failed, but some drivers carry the gear shift lever with them for use in case of emergency, just as a starting crank is carried in case of an accident to the starter. It is difficult to conceive of any accident other than wrecking the car itself, that would put the Gear Shift out of commission.

Q.: What happens if the reverse button is pushed by mistake?

A.: Nothing. The gears do not mesh. This contingency was provided for in perfecting the Gear Shift.

Two classes of people buy automobiles—the seasoned driver and the novice.

The seasoned driver does not need to be told the advantages of the Gear Shift. You merely tell him how it works and he immediately realizes how it adds to the simplicity and pleasure of driving; that it will permit him to utilize—flexibly—every ounce of power his motor can develop.

He appreciates the advantage of a clear floor board; of shifting his gears from the steering wheel; of being able to go from a standstill to 20 miles an hour, down to 5 and back again to 20, in less than 7 seconds. He knows what this means in traffic crowded streets. No lost momentum; instantaneous shifting of gears; wonderful getaway.

The **C-H Magnetic Gear Shift** makes an irresistible appeal to the novice because it makes the most powerful gasoline car as easy to drive as an electric.

"Push a button and step on the clutch lever" that's all the instructions the novice needs and there are more novices than drivers, more prospects than owners—if the car you sell is a gear shift equipped. Think of the value of the gear shift to the new driver—or to the *woman driver*

Let the gear shift make sales for you. Ask the manufacturers of the car you handle if their new models will have this final refinement.

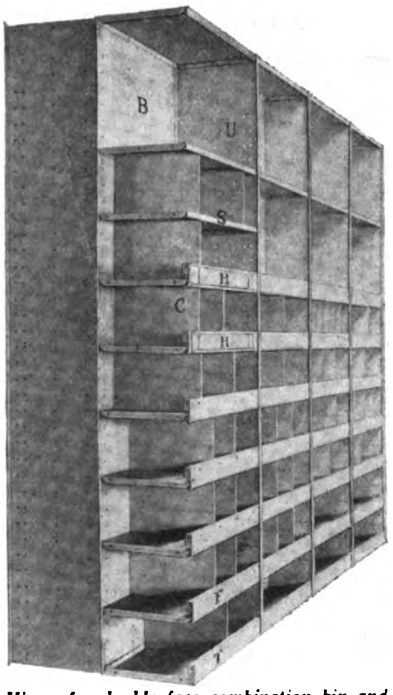
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The CUTLER-HAMMER MFG. CO. - Milwaukee, Wis.

World's Largest Manufacturers of Electrical Controlling Apparatus

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How Do You Store and Handle Your Repair Parts?



View of a double face combination bin and shelving assembly with one upright removed and the various parts lettered. U—Upright. B—Back. S—Intermediate Shelf. T—Bottom Shelf. F—Bin Front. C—Compartment Dividers. H—Card Holders

REPAIRS furnish one of the chief sources of income for the modern garage. Consequently, a large supply of parts, in various shapes and sizes, must be carried in stock. To *properly* care for these parts, *proper* equipment is necessary.

Berger's Steel Bins and Shelving

furnish a systematic method for keeping the various materials in a definite place and in perfect condition. By so doing, confusion, wasted time and costly delays are eliminated.

Berger's Steel Bins and Shelving utilize every inch of floor space and, being built on the unit principle of construction, an equipment can be installed to fit any space. It can be quickly adjusted, taken apart and rearranged to meet changing conditions without any depreciation.

This equipment carries heavy loads, is fire retardant and indestructible—cannot warp, split or rot. Gives a lifetime of service at reasonable cost.

Berger's Steel Tire Racks

These racks keep tires where oil, dirt and grease cannot injure them. They retain shape of tires, save time in handling and economize on valuable floor space. Racks are firm and rigid, and can be readily taken apart or new units added as required. Reasonable in cost—a permanent investment on which there is no depreciation.



A typical garage equipment of Berger Tire Racks and Top Shelves.

May we explain the many advantages this equipment offers you? Write for full particulars and Catalog R. W.

The Berger Manufacturing Company, Canton, Ohio

Branches: Boston, New York, Philadelphia, Chicago, St. Louis, Minneapolis, San Francisco, Los Angeles.
Export Dept.: Berger Bldg., New York City, U. S. A.

A Service Feature of International Motor Trucks



EXCEPT perhaps the engine, no single part of the motor truck you buy deserves closer study than the rear axle. The useful life of the truck depends largely upon the behavior of this important member. The one piece type, with chain drive, has the advantages of strength and lightness. The shaft drive has the advantages of neatness, silence, and protection of the drive gears. The *International* rear axle combines the advantages of both types and does away with their disadvantages.

A heavy one-piece forging carries the load. A shaft drive delivers the power of the motor to the rear wheels through an internal gear. The axle is as strong as a chain drive axle, yet is much lighter than the usual shaft drive type, and gives more road clearance. The internal spur gear, also, outwears every other form of drive, and is the one that behaves best if your driver should ever be careless about oiling it.

The rear axle is only one of many first-class features of *International Motor Trucks*. We want your order, but we want it only on the basis that an International Motor Truck will give you better service and prove to be a better investment than any other truck you can buy. Write and tell us which of these two models comes nearest to your requirements, and we will send you complete description.

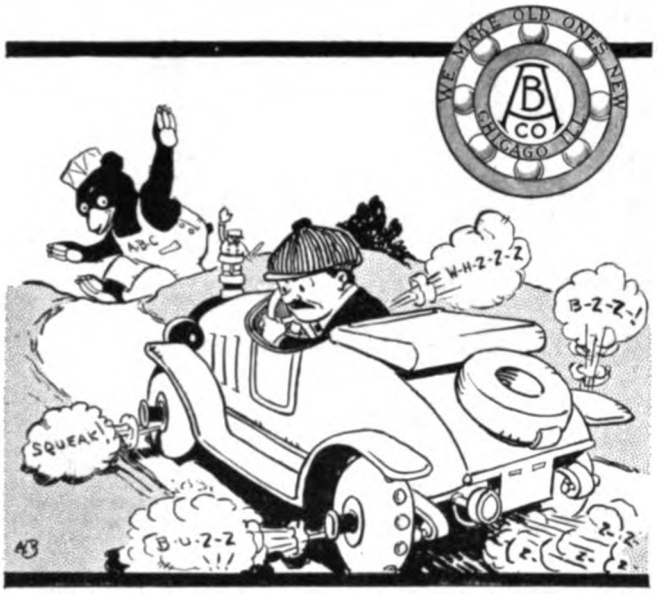
Model H—1500 lbs. capacity, chassis, $1225 cash f.o.b. factory
Model F—2000 lbs. capacity, chassis, $1500 cash f.o.b. factory

International Harvester Company of America

(INCORPORATED)

155 Harvester Building **Chicago, U. S. A.**

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"Perhaps Your Bearings Now Are Calling for an Ahlberg Overhauling"

Our complete stocks of both new and reground Bearings of every type for every car are at your service.

A wobbly wheel, a growl in your motor, transmission or differential may mean a worn-out bearing.

Our charge for regrinding and guaranteeing worn bearings equal to new is very small.

WE HAVE THE MOST COMPLETE BEARING SERVICE IN THE UNITED STATES

1. Branches in all principal cities
2. New Bearings in all types for all Cars
3. Instantaneous Exchange Service on Reground Bearings at a small cost
4. Special Bearings to your Specifications
5. Willing and courteous Bearing Experts in charge of each Branch

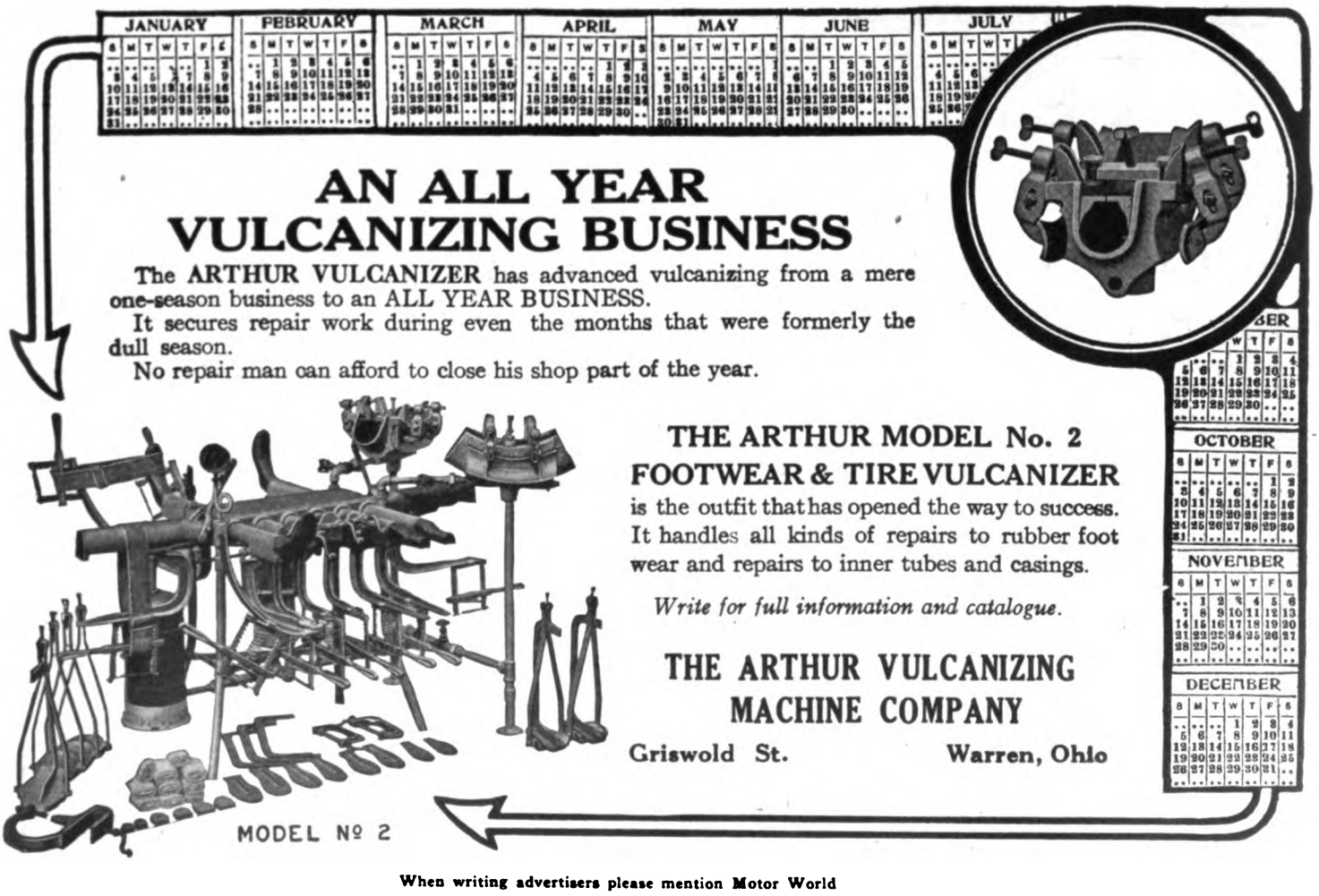
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For Quickest Service see our nearest Branch

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AHLBERG BEARING COMPANY

2636 Michigan Avenue **Chicago, Illinois**



AN ALL YEAR VULCANIZING BUSINESS

The ARTHUR VULCANIZER has advanced vulcanizing from a mere one-season business to an ALL YEAR BUSINESS.

It secures repair work during even the months that were formerly the dull season.

No repair man can afford to close his shop part of the year.

THE ARTHUR MODEL No. 2 FOOTWEAR & TIRE VULCANIZER

is the outfit that has opened the way to success. It handles all kinds of repairs to rubber foot wear and repairs to inner tubes and casings.

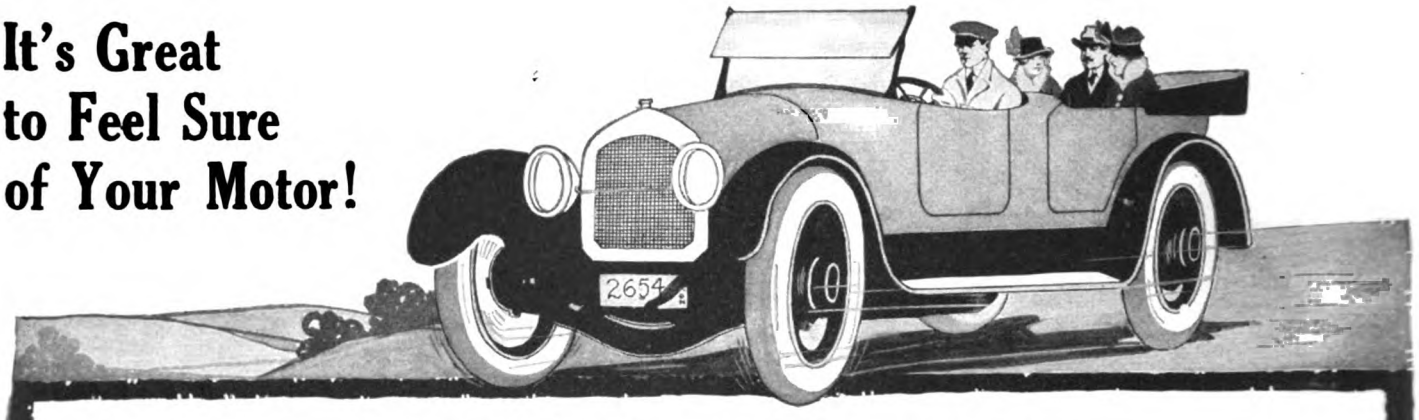
Write for full information and catalogue.

THE ARTHUR VULCANIZING MACHINE COMPANY

Griswold St. Warren, Ohio

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It's Great to Feel Sure of Your Motor!



When you KNOW every explosion will give you ALL its power—that's when motoring is solid satisfaction. The

EISEMANN
MAGNETO



makes complete combustion certain. It drives its intense, penetrating spark through the densest compression. Mixture rich or lean, motor racing or barely turning over, you'll be sure of full power if your car is Eisemann equipped!

THE EISEMANN MAGNETO COMPANY
Sales and General Offices, 32-33d St., Brooklyn, N. Y.
Detroit, Mich., 802 Woodward Ave.

LISTEN!



You Dealers and *Repairmen* Who Are Particular About The Quality Of The Goods You Sell

WHEN you sell a Harvey spring there are never any kicks or "comebacks," because Harvey springs give absolute satisfaction to the car owner. They have no bolt hole at center—no weak spots anywhere—and are guaranteed from end to end against all defects. If a spring proves defective at any point, we will replace it.

We are partners with every Harvey dealer. Not silent partners, either—we're spending thousands of dollars this year to post car owners in every section of the United States on the merits of Harvey springs—urging them to look for a Harvey dealer when in need of replacements.

It will pay you—big—to connect with this live-wire advertising. Let people know you handle Harvey springs if you expect to get your full share of spring replacement business—and profits.

Harvey springs are made for over 600 of the leading makes and models of cars and each spring is an exact duplicate of the spring it is intended to replace—fits with an accuracy that will surprise you. Write us at once for name of your nearest jobber.

Harvey
RACINE

SPRINGS DO NOT BREAK

FREE

Write for the Harvey Spring Book which contains a complete list of springs for all the leading makes and models of cars—gives sizes, weights, measurements, prices, etc., and prevents mistakes in ordering replacements. We mail it free.

HARVEY SPRING COMPANY
848 Seventeenth Street, RACINE, WISCONSIN

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Come to Detroit
The Automobile Center and

LEARN THE AUTOMOBILE BUSINESS—EARN $75. TO $300. A MONTH

With the New Building and Thousands of Dollars Worth of New Equipment, Our's is the Largest Exclusive Auto School in the Country



Detroit trained men get preference and get jobs quickly. Think what it means to learn in the Michigan State Auto School. Factories endorse our School, glad to employ our graduates and offer them territory. Men are needed everywhere as testers, repair men, chauffeurs, garage men and service men. Hundreds of our graduates start in business for themselves.

Get Better Job—or—Go In Business

We teach you to handle any auto proposition. Students actually build cars from start to finish, getting factory training in assembling, block-testing, road testing, everything. Special complete course in Oxy-Acetylene brazing, welding and cutting, separate from regular course. All leading types of starting, lighting and ignition systems in operation. Six-cylinder Lozier, eight-cylinder King used for road instruction. We have a new Chalmers "6-30" chassis with 3400 r.p.m. motor, also Willys-Knight 1917 chassis, Maxwell 1917 chassis, Saxon 1917 chassis, Studebaker "6" 1917 chassis, Hudson Super Six 1917 chassis, Oldsmobile "8" 1917 chassis, Cole "8" 1917 chassis, Briscoe 1917 chassis, Detroit Electric 1917 chassis and Winton "6" chassis. Just added Delco System used in Buick, Hudson and Packard Twin-6.

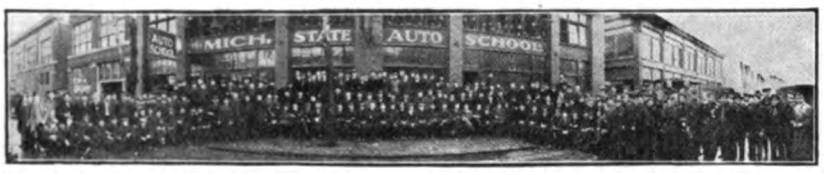
Detroit Is the Place to Learn—Start Any Time

There are 44 auto factories in Detroit and 140 accessory and parts factories. We operate Westinghouse, Autolite, Bijur Service Stations. This has added thousands of dollars' worth of equipment and makes our electrical department unequaled. Students get actual experience in handling all kinds of electrical auto equipment. We have just installed a Sprague Electric Dynamometer for block-testing purposes for students' use. The Michigan State Auto School is the only Auto School having this equipment. Auto factories need Dynamometer men constantly. School open all the year. You graduate in from 10 to 12 weeks. Enter classes any time, any day. Three classes daily; morning, afternoon, evening. There is a great demand for Michigan State Auto School students. Auto factories call for men constantly to fill permanent places.

Follow the Crowd to the Michigan State Auto School. This is one of the 1916 classes. Come to Detroit.

Money Back Guarantee

We guarantee to qualify you in a short time for a position as chauffeur, repair man, tester, demonstrator, garage man or automobile dealer, paying from $75 to $300 monthly, or refund your money. We have constantly more requests for Michigan State Auto School Graduates than we can supply.





Auto Factory Co-operation—Additional Building and Equipment

We have arrangements with the Auto factories to put them in touch with men who intend going into business for themselves. Come here and start right. Thousands of dollars' worth of new equipment, plenty of room for students to work in our new building at 687-89-91 Woodward Ave. Our school has grown by leaps and bounds, students come from all over the world.

AUTO FACTORIES ENDORSE OUR SCHOOL

The Leading Auto Factories in Detroit, as well as in other cities, endorse our school. They put their latest complete chassis and motors in our school and employ our graduates in the factories and service stations. They know our school is right. Get full particulars. "Auto School News" and New Catalog, both absolutely free, or better still, jump on a train, as hundreds have done, and come to Detroit, the "Heart of the Automobile Industry," and learn right.

Dealer's Opportunity

We can supply competent high grade men to handle your garage and repair shop. Our Graduates are especially well fitted to handle electric troubles. They get actual experience while in their final work. We are constantly supplying men to all parts of the country.

ACT QUICKLY—NOW —DON'T WAIT

Michigan State Auto School

The Old Reliable School
A. G. ZELLER, President

8202 Auto Bldg., 687-89-91 Woodward Ave., 11-19 Selden Ave. DETROIT, MICHIGAN, U. S. A.

Garage Necessities That Draw Trade Your Way







5 SIZES
Tight Pulley Only or Tight and Loose Pulley

10 Combinations of Compressor and Tank Sizes—Any Current

10 Combinations of Compressor and Tank Sizes—Any Current

Get the edge on competition by installing a Curtis Air Compressor. It will draw trade your way and hold business for you against keen methods of competitors and "cut prices".

Curtis outfits furnish **Air Free From Oil.** Just what the auto owner is looking for. It means fewer blow-outs, fewer punctures, increased mileage, less repairs. Saves him many dollars upkeep every month—makes him your friend for life.

CURTIS AIR
FREE FROM OIL

The Curtis Air Compressor is built by manufacturers who have had 25 years experience as specialists in this line. It is the only Garage Air Compressor so designed that it can't flood the cylinder with more oil than it needs or can use. No danger of forcing oil into the air line. Guaranteed to stand up under severest strains of hard usage and give good, efficient service at all times and under all conditions.

A Paying Investment

Besides pulling trade your way—furnishing air **Free From Oil**—note what a Curtis Air Compressor will do for you. You can **Paint** with it—use it for **Cleaning** metal bodies—use it on your **Vulcanizer**—use it **Lifting** heavy loads—for **Blowing** dust from cushions and chips and drillings from tools—for **Operating** kerosene cleaners, sand blasts, power presses, pneumatic jacks—for **Pumping** oil and in numerous other ways.

5 Sizes—120 Combinations

Send coupon for full information and attractive prices. Find out about these Trade Getters—Money Makers. Our proposition is one that will appeal to you. Write TODAY. Or, ask your jobber for prices, but insist on the CURTIS.

Curtis Pneumatic Machinery Co.
1546 Kienlen Avenue St. Louis, Mo.
Branch Office: 531 B Hudson Terminal, New York



CURTIS CORRECT PRESSURE Tire Filling Station

will make your Garage the most popular one in town—a favorite stopping place for all motorists. Why? Because by merely turning the dial to size of tire, motorists can inflate tires to **correct** pressure, regardless of pressure carried in the storage tank—eliminates extra strain on tires caused by over inflation.

By securing correct pressure for tires, rim cutting is prevented; punctures and stone bruises are almost entirely eliminated; mileage is increased; tire expense reduced. A soft tire rides easily, but wears out quickly.

Send coupon for description and prices of full equipment all ready for connection to your air supply lines. We'll send you full details and tell you how a Curtis Station **pays for itself in new business brought in.**

CURTIS PNEUMATIC MACHINERY CO.
1546 Kienlen Ave. St. Louis, Mo.

Gentlemen: Please send me full details regarding Curtis Garage Air Compressor ☐
Curtis Correct Pressure Tire Filling Station ☐
Also low prices and your proposition.

Name.....
Address.....
Jobber's Name.....
Address.....

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Prudent Motorists

insist upon getting it in the original container—it's their guarantee of absolute cleanliness, full quantity, no waste, uniform quality, and all

HAVOLINE
REG. U.S. PAT. OFF.
OIL

"It makes a difference"

By selling Havoline Oil in the sealed container, you insure your customers perfect satisfaction.

The high standards of Havoline quality plus the sound, consistent principles of Havoline merchandizing, are the dealer's guarantee of 100 per cent service to the consumer.

Indian Refining Company, Inc., New York
Producers and Refiners of Petroleum





SUPREME AUTO OIL
Starts with the Engine

This is most important during the winter months. You should know whether the oil you are using "flows freely at zero." All oils do not possess this feature—notably the paraffine-base oils, which thicken up under cold and often cause great damage to the motor.

The safe way is to ask for SUPREME AUTO OIL—it **"Flows Freely at Zero"** and leaves less carbon, owing to the fact that it is a Southern Asphalt-base oil containing no paraffine to gum, stick or thicken.

GULF REFINING COMPANY
PITTSBURGH, PA.
The Largest Independent Refining Company in the World

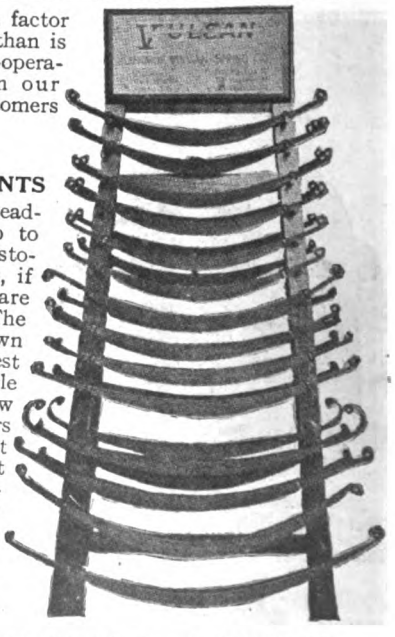
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Even the Splendid Quality of our Springs—

is no stronger a factor in our success than is the hearty co-operation between our dealers, our customers and ourselves.

SPRING REPLACEMENTS

—are going on steadily. They help to make new customers for dealers, if the new springs are good ones. The stand here shown is one of the best methods possible to attract new spring purchasers You can get it free, and with it the quickest deliveries and most thoughtful, helpful co-operation we know how to give. Write us about it.



JENKINS VULCAN SPRING COMPANY
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708 Commerce St. Fort Worth, Tex.
29 Caldwell St. Sumter, S. C.

VULCAN QUALITY

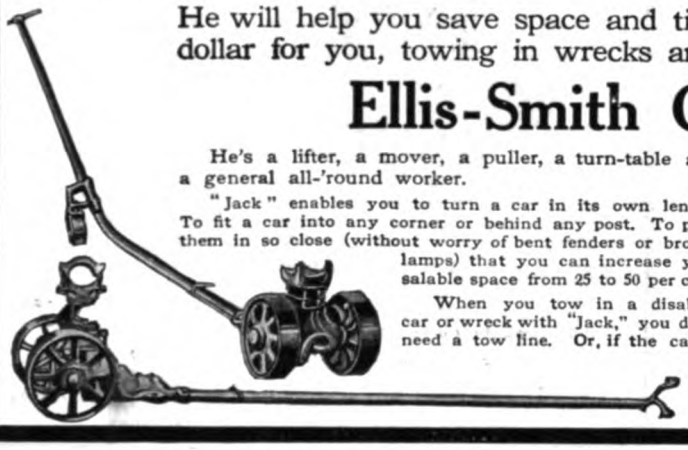
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You Have a Job for "Jack"

He will help you save space and time and he'll pick up many an extra dollar for you, towing in wrecks and disabled cars. *"Jack's" full name is—*

Ellis-Smith Combination Jack



He's a lifter, a mover, a puller, a turn-table and a general all-'round worker.

"Jack" enables you to turn a car in its own length. To fit a car into any corner or behind any post. To pack them in so close (without worry of bent fenders or broken lamps) that you can increase your salable space from 25 to 50 per cent.

When you tow in a disabled car or wreck with "Jack," you don't need a tow line. Or, if the car is minus a wheel or wheels, you simply place "Jack" beneath the axle and tow ahead. Fifteen to twenty miles an hour is easy—for "Jack" is supplied with 10-inch roller bearing wheels and grease cups.

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THE ELLIS-SMITH MFG. CO., Inc.
218 Niagara Street, BUFFALO, N. Y.



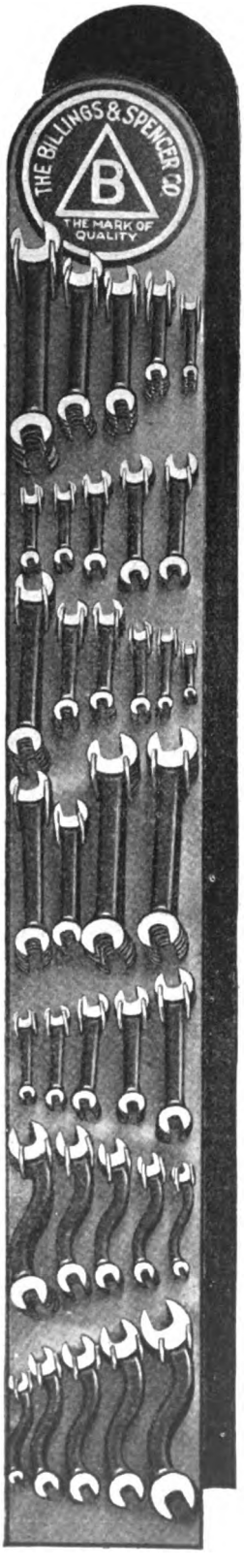
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It is being displayed successfully by 4,000 dealers in this country alone.

It is free, being furnished with your order for wrenches.

It works every minute of the working day by saving time, space and attracting your customers' attention.

It eliminates your searching through drawers and instantly shows your customers the exact wrench they are looking for.

It keeps before you the quantity of wrenches you have in stock.

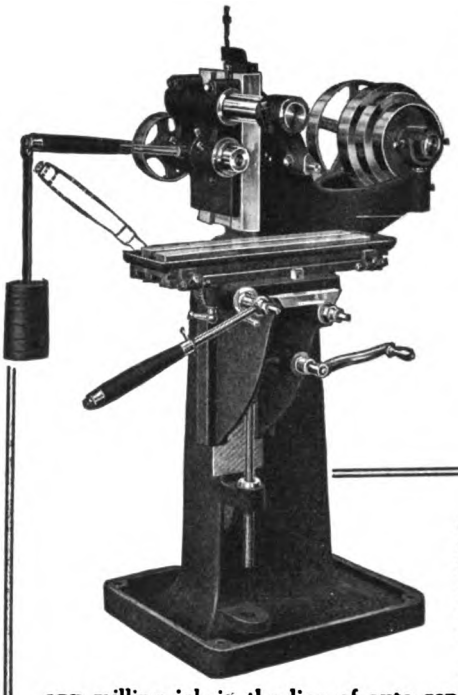
It is practical, it is convenient, it is attractive.

It is a feature for your store and indicates that you are a progressive dealer.

Look into this matter now. You might as well get all that is coming to you. There's no reason to overlook a bet. Write today for catalog and information.

Every wrench stamped with the Billings & Spencer Triangle trademark is unconditionally guaranteed.

THE BILLINGS & SPENCER CO. B
HARTFORD, CONN. U.S.A.



Equip Your Garage With a Whitney Hand Miller

so you won't have to turn away profitable repair business, or turn it over to the machine shops.

The Whitney will take care of any milling job in the line of auto repairs. With it you can cut gears, cams, sprockets, do key-seating, straddle milling, profiling, slotting, slabbing, drilling, die sinking and countless other operations.

With this all-around machine you can handle the work in your own garage. You can avoid delays; you can accommodate customers.

Simply send a postal for Catalog No. 7

The Whitney Mfg. Co., Hartford, Conn.
Chains, Keys, Hand Milling Machines



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Write for it today. If you do any sort of a Ford business at all you should be able to dispose of any number of Van Sicklen Headlight Concentrators to owners of 1915-1916 Ford cars. At $2 anyone can afford this wonderful little device.

VAN SICKLEN
AUTOMATIC
HEAD LIGHT CONCENTRATOR
FOR FORD CARS

At all speeds below 15 m.p.h. the VAN SICKLEN Concentrator automatically short-circuits the right headlamp and supplies *double current* to the left headlamp. At 10 m.p.h., for instance, the left lamp is burning as brightly as it would be at 20 m.p.h. To owners of electrically-lighted Ford cars this advantage is invaluable. Concentrator fastens on the under side of dash. Quickly installed by anyone. Accompanied with full instructions for installation. Absolutely guaranteed not to injure the magneto or headlight bulbs. Use coupon for full information.



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BRAKE LINING

Made right—it holds right; meets every test.

$1.50 Ford Set

is complete with three proper lengths for Ford Transmission and all rivets required. For sale by wide-awake dealers. If your dealer hasn't it, send his name and $1.50—we'll send it direct, postpaid.



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Waterproofs and renews old and leaking tops.
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Renews and softens tops of leather and imitations.
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Allows tires to be removed with ease.
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Why Not Be Sure

that every part of the engine; chassis, or body of the car you make will **stay together** until taken apart?

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are the simplest, surest, safest device to positively lock any nut on any bolt. Resists all vibrations. Cannot harm threads. Easily applied. Released whenever desired.

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Spring Nut Lock tightened against Nut. Prevents Nut being shaken off and follows Nut tightening against material.

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(ready to use)

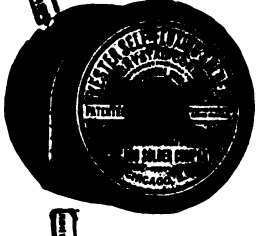


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Use it for battery terminals, gasoline pipe and tank joints, electric light connections, radiator leaks, cracked fenders, speedometer flexible shaft, spark plug terminals and general garage use. Sold in coils of 1 pound, and on spools of 1, 5 or 10 pounds.

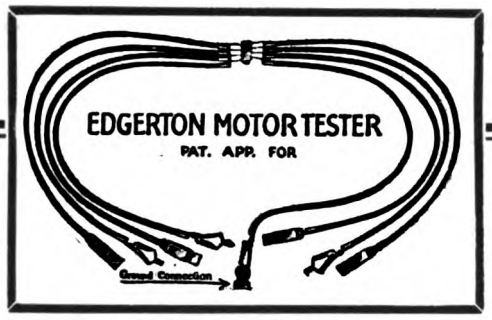


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A Tester That Will Sell Because It—

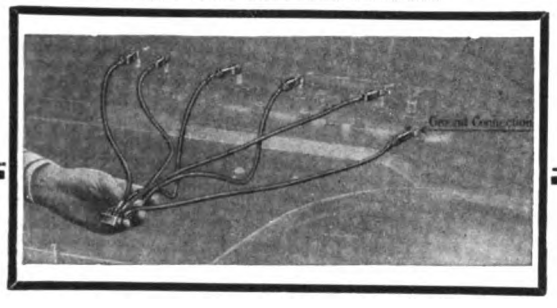
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It does this scientifically, and at a minimum expense of time and labor and without dismantling any part of the motor. Every garageman, repairman and owner needs it and will get it. Whether he gets it from you depends on how soon you—

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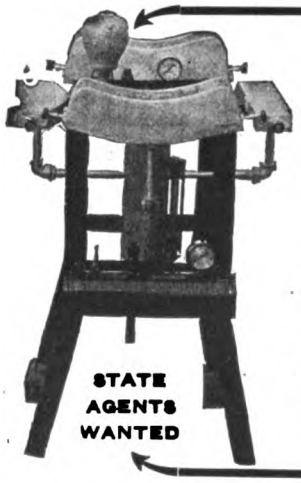
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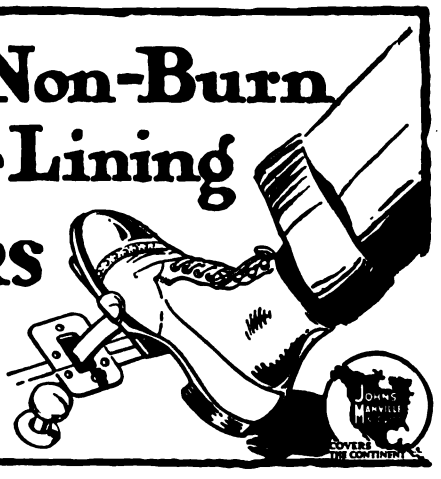
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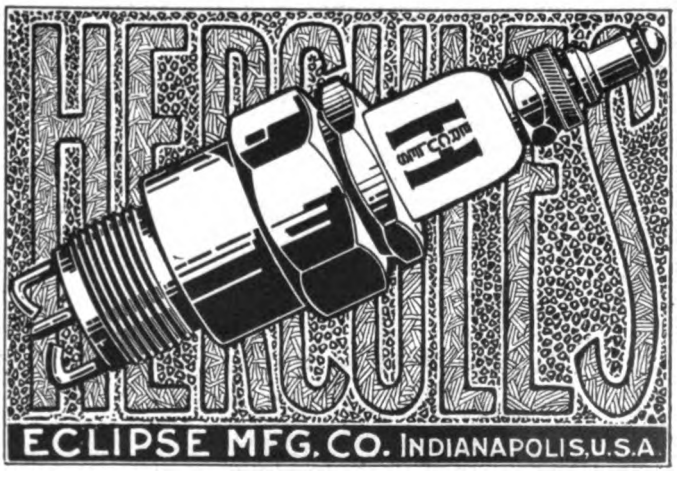
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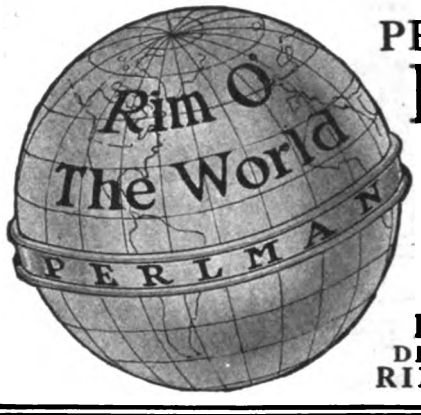
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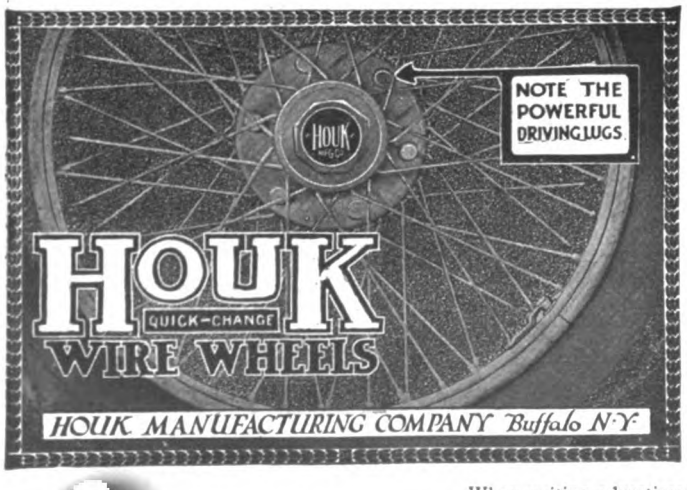
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THE 100% PERFECT SPOTLIGHT



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HOUK QUICK-CHANGE WIRE WHEELS
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National Speedway Tires



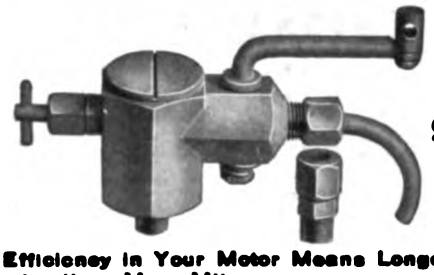
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Greater Efficiency in Your Motor Means Longer Life, Less Overheating, More Mileage.

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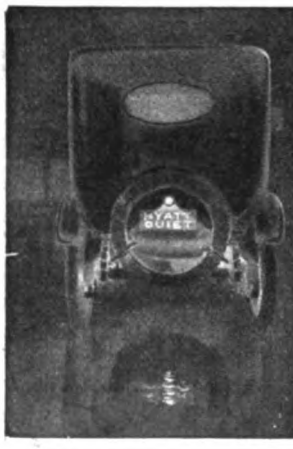
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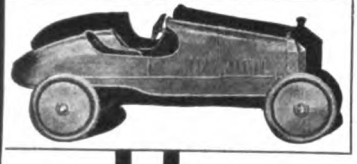
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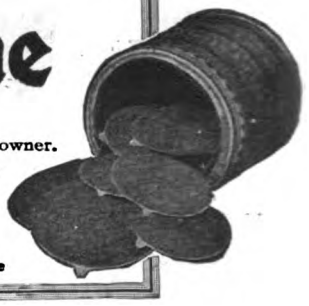
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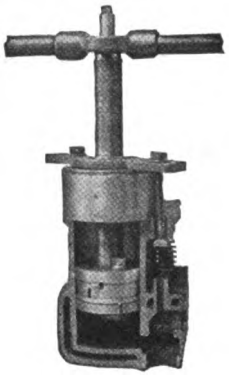
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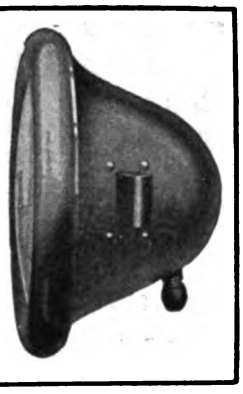
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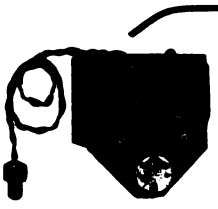
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32x3½	9.50	2.50	35x4½	17.50	4.15
34x3½	10.00	2.55	36x4½	18.00	4.25
36x3½	11.25	2.75	37x4½	18.50	4.36
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34x3½	6.00	1.60	36x4½	10.00	1.85
31x4	6.75	1.65	37x4½	9.00	1.90
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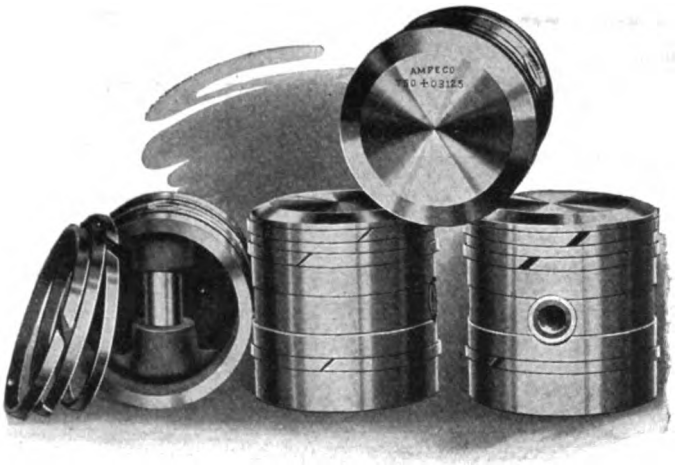
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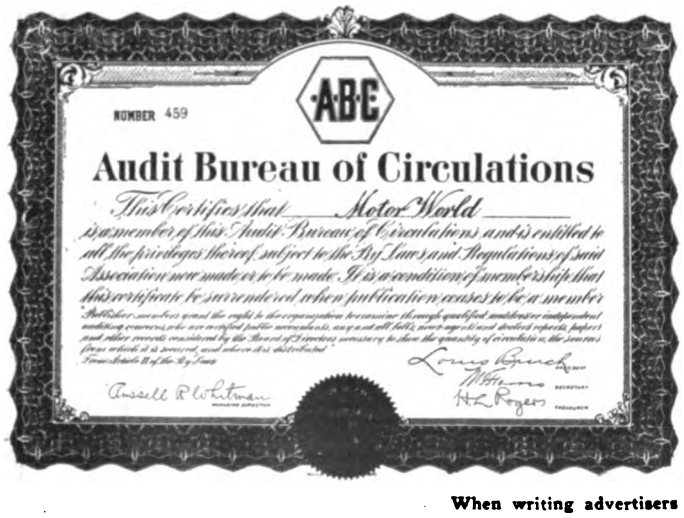
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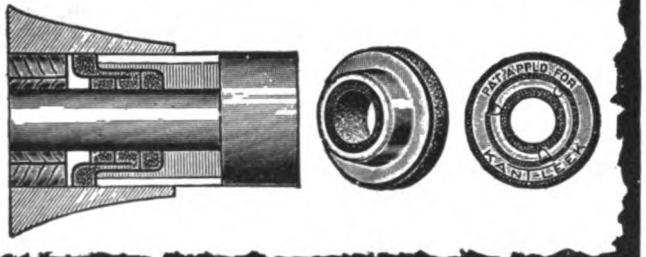


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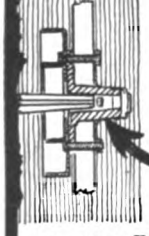
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Advertisers' Index

A

Advance Felt Specialty & Cutting Co. 107
Ahlberg Bearing Co. 99
Ajax Rubber Co. 123
Akron Auto Garage Co. 110
American Bronze Co. 113
American Machine Products Co. 123
American Motor Co. 56
Ames Co., F. A. 113
Anderson Steam Vulcanizer Co. 108
Arthur Vulcanizing Machine Co. 99
Automobile, The 111
Auto Pedal Pad Co. 123

B

Backus Novelty Co. 111
Battle Creek Vulcanizing Eq. Co. 109
Benford Mfg. Co. 114
Berger Mfg. Co. 98
Bergie National Spark Plug Co. 91
Billings & Spencer 104
Blake Signal & Mfg. Co. 123
Bosch Magneto Co. 114
Bower Roller Bearing Co. 96
Brown-Lipe-Chapin Co. 114
Brown Mfg. Co., J. W. 115
Brunswick Motor Car Co. 108
Butler Mfg. Co. 114

C

Cadillac Auto Truck Co. 75
Cassidy, E. A., Inc. 61
Champion Ignition Co. 60
Chase & Co., L. C. 110
Chicago Auto Supply House 123
Chicago Fuse Co. 115
Chicago Solder Co. 107
Cincinnati Auto Specialty Co. 105
Cole Motor Car Co. 78
Collison, George A. 114
Columbus Varnish Co. 106
Corbin-Brown Speedometer Co. 3
Crane Puller Co. 123
Curtis Pneumatic Mach. Co. 101
Cutler Hammer Mfg. Co. 97

D

Day Elder Motor Corp. 81
Delion Tire & Rubber Co. 113
Denby Motor Truck Co. ..... Back Cover
Detroit Accessories Corp. 113
Detroit Battery Co. 112
Detroit Starter Co. 77
Disco Electric Starter Co. 109
Du Pont Fabrikoid Co. 74

E

Eclipse Mfg. Co. 109
Edgerton & Co., R. G. 108
Eisemann Magneto Co. 100
Ellis-Smith Mfg. Co. 103
Empire Tire & Rubber Co. 72
Eureka Rim Corp. 63
Ever-Tight Piston Ring Co. 103

F

Fedders Mfg. Co. 111
Firestone Tire & Rubber Co. 114
Fisk Rubber Co. 2
Fried & Stonier Co. 112
Fulton Co. 111

G

Gardner Governor Co. 108
Garford Motor Truck Co. 92
General Asbestos & Rubber Co. 70
Gibson-Hollister Mfg. Co. 109
Goodman Auto Body Co. 109
Goodell-Pratt Co. 113
Grossman Corp., Emil 115
Gulf Refining Co. 102

H

Hal Motor Car Co. 71
Hartford, E. V., Inc. 108
Harvey Spring Co. 100
Hawthorne Mfg. Co. 110
Hill Pump Valve Co. 112
Houk Mfg. Co. 110
Hurlburt Motor Truck Co. 111
Hyatt Roller Bearing Co. 111

I

Imp Carbon Chaser Corp. 112
Indian Refining Co. 102
International Harvester Co. 98
Inter-State Motor Co. 114

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Advertisers' Index

J

Jenkins Vulcan Spring Co. 102
Johns-Manville Co., H. W. 109
Johnson Co. 80

K

K. & W. Rubber Co. 87
Kant-Leek Mfg. Co. 124
Kellogg Mfg. Co. 83
Keys Piston Ring Co. 95

L

Laminated Shim Co. 125
Legalite Corp. 79
Lewis Electric Welding & Mfg. Co. 107
Liberty Motor Car Co. 115
Lunkenheimer Co. 125

M

Manley Motor Corp. 109
Mason Tire & Rubber Co. 94
Maxwell Motor Co. 89
Michigan State Auto School 101
Miller Rubber Co. ..... Front Cover
Monroe Motor Co. 126
Mosler & Co., A. R. 113
Mossberg Co., Frank ..... 3rd Cover
Motor Age 123

N

National Cash Register Co. 69
National Motor Car and Vehicle Corp. 55
National Rubber Co. 110
New Departure Mfg. Co. 105
New Era Spring & Specialty Co. 123
New Process Gear Corp. 82

O

Oakes & Dow 124
Oakland Motor Co. 111
Olds Motor Co. ..... 49 to 50

P

Perlman Rim Corp. 110
Pouvaillamith Corp. 62
Prest-O-Lite Co. 112

Q

Quaker City Rubber Co. 93

R

Raybestos Co. 58-59
Redee Mfg. Corp. 111
Regal Motor Car Co. 109

S

Scripps-Booth Corp. 90
Selden Truck Sales Co. 108
Shaler Co., C. A. 88
Sheldon Axle & Spring Co. 112
S. K. F. Ball Bearing Co. 112
Sparks-Withington Co. 110
Spring Nut Lock Company 106
Standard Electric Tool Co. 110
Staybestos Mfg. Co. 105
Stephens Motor 4
Stevens & Co. 113
Stewart-Warner Speedometer Corp. ..... 2nd Cover
Storm & O'Hair Co. 114
Studebaker Corp. 1
St. Louis Electrical Works 115
Swinehart Tire & Rubber Co. 113

T

Texas Co. 76

U

U. S. Air Compressor Co. 73
Universal Car Equipment Co. 113

V

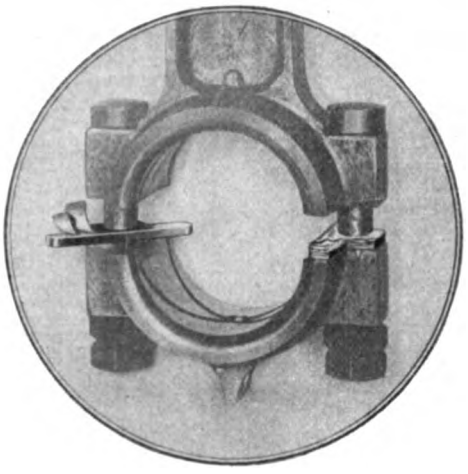
Van Cleef Bros. 115
Van Sicklen Co. 104

W

Waltham Watch Co. 57
Warner Auto Top Co. 112
Westfield Chemical Co. 106
Whitney Mfg. Co. 104
Willard Storage Battery Co. 64
Wood Co., W. C. 107
Woodworth Mfg. Corp. 94

Z

Zenith Carburetor Co. 115



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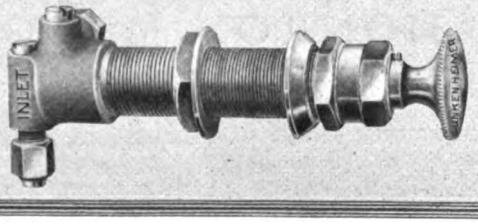
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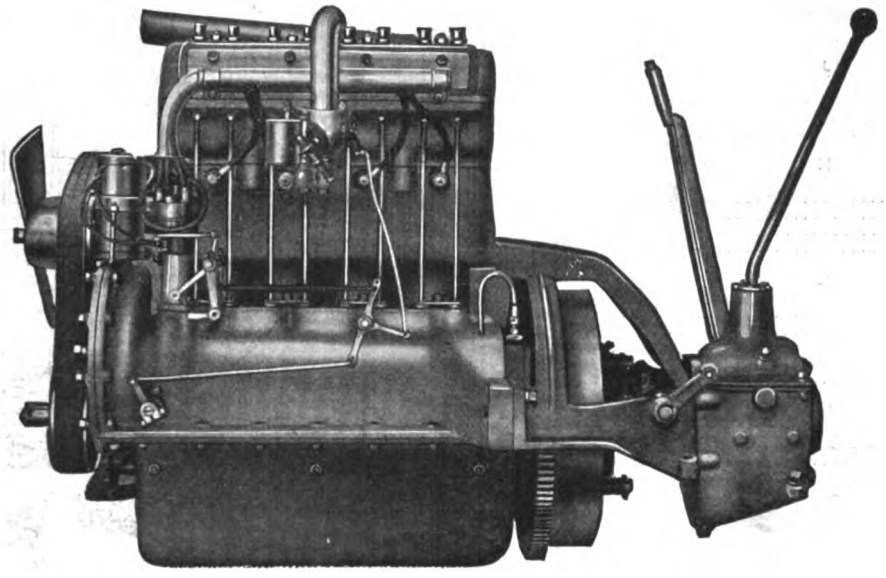
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The Monroe

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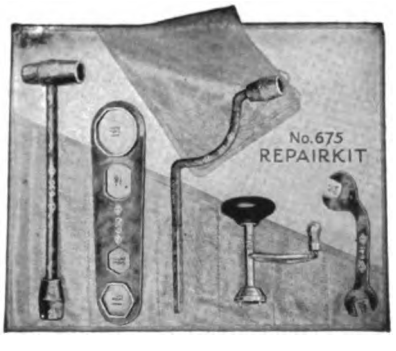
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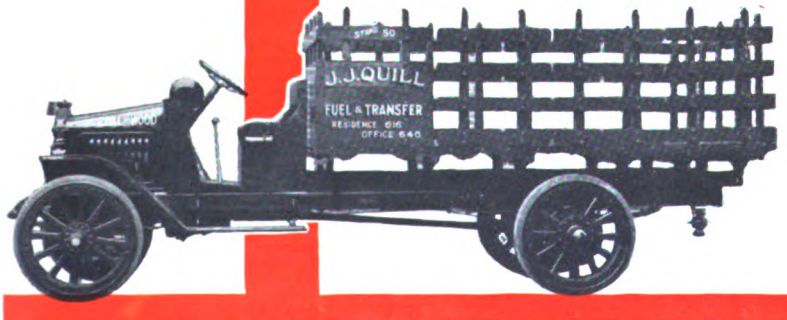
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From Nothing to Success in Three Years—See page 5

MOTOR WORLD

for

DEALERS, JOBBERS AND GARAGEMEN

Volume L
No. 7

New York, February 14, 1917

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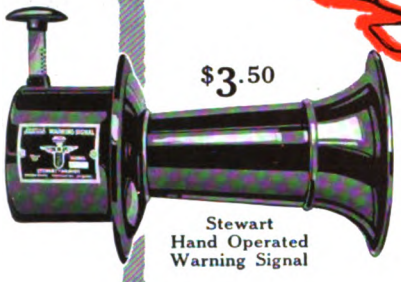
Editorial Contents—Page 3

Advertisers' Index—Next to Last Page

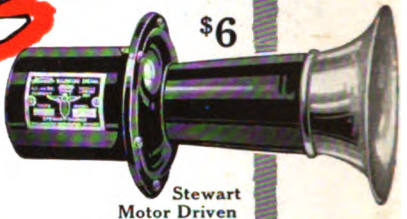
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The Class Journal Co.
231-241 West 39th Street, New York City
Horace M. Swetland, President
W. I. Ralph, Vice-President E. M. Corey, Treasurer
A. B. Swetland, General Manager

Business Department
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Editorial Department
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Branch Offices
Chicago—Mallers Bldg., 59 East Madison St., Phone Randolph 6960
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Subscription, Per Annum (Postage Paid).....$2.00
Foreign and Canadian Subscriptions.....4.00
Single Copies (Postage Paid).....10 Cents

Postage Stamps will be accepted in payment for subscriptions. Checks, Drafts and Money Orders should be made payable to MOTOR WORLD.
The payment of subscriptions will be shown by stamping the date of expiration—the month and year—on the wrapper that carries your paper each week. No other acknowledgment necessary.

Cable Address, "MOTORWORLD," New York
Entered as second-class matter at the New York Post Office, Nov., 1900
Member of the Audit Bureau of Circulations

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Editorial Contents

Success in Three Years.....5-7
Lostro started with nothing just three years ago, and at the New York show turned down an offer which would have brought him $30,000 a year.

The Man Whose Legs Were Wood.....16-17
Do you stand around like a stick? You ought to read what Reilly says about sticks.

Where Exhibiting Is Worth While.....8-10
Minneapolis has put on a real show and they have to close the doors to keep the crowd out.

Snow Spells Prosperity.....11-15
It means big crops in the West and this means plentiful money.

Should Old Acquaintance Be Forgot?....16 & 43
Brief bits of history from the lives of old-timers at the Minneapolis show.

A System to Avoid Disputes.....33

It's Hard to Sell Cars in Sweden.....29

Better Mechanics.....34-35
Relining Dodge brakes.

60,000 Cars for Indiana.....40-41
Indianapolis is throbbing with prosperity and dealers have little to worry them.

Los Angeles Greets Firestone Men.....48

Winter Business.....18-19

Accounting and Business Systems.....20-21

Repairshop Short-Cuts.....22-23

Dealers Who Have Made Good.....24

Angles of the Law.....25

Questions Answered.....26-27

Editorial Observation.....28

The Retail News.....30-32

The Newest Accessories.....36-37

Scientific Garage Construction.....38-39

Motor World Guide.....50-51

Regular News Department.....44-49

Advertisers' Index on Pages 130-131

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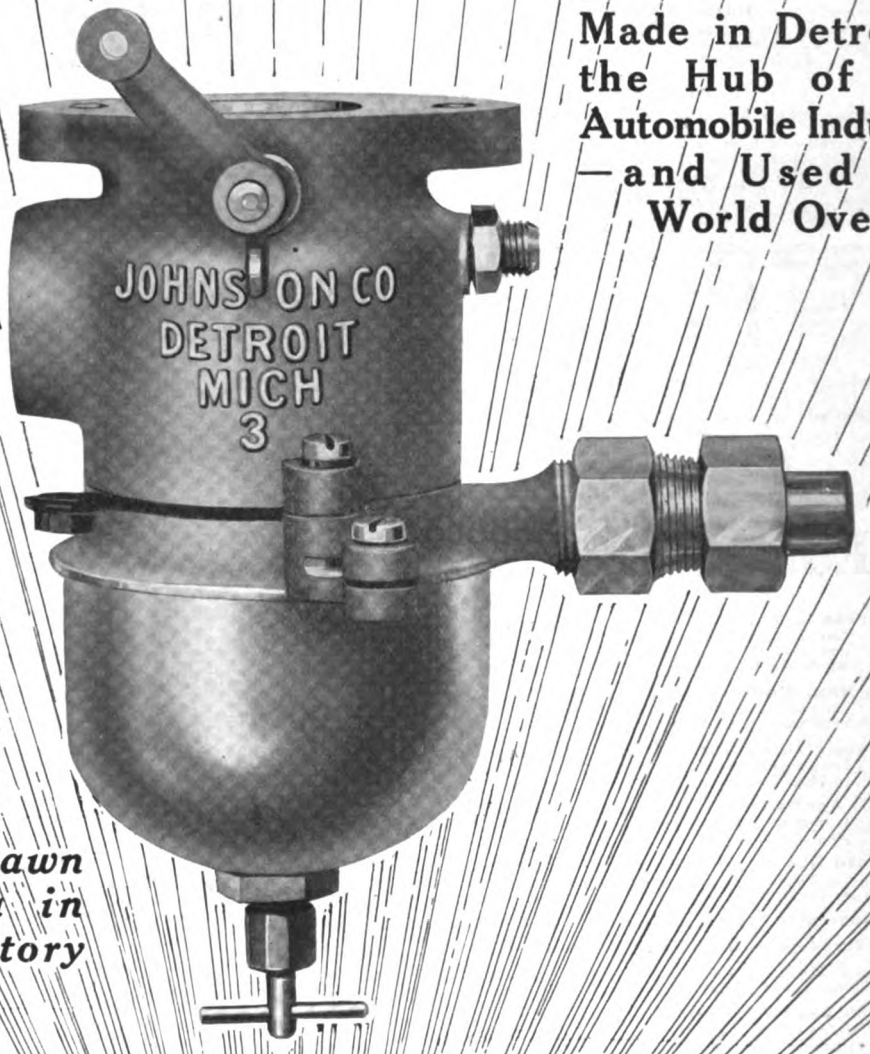
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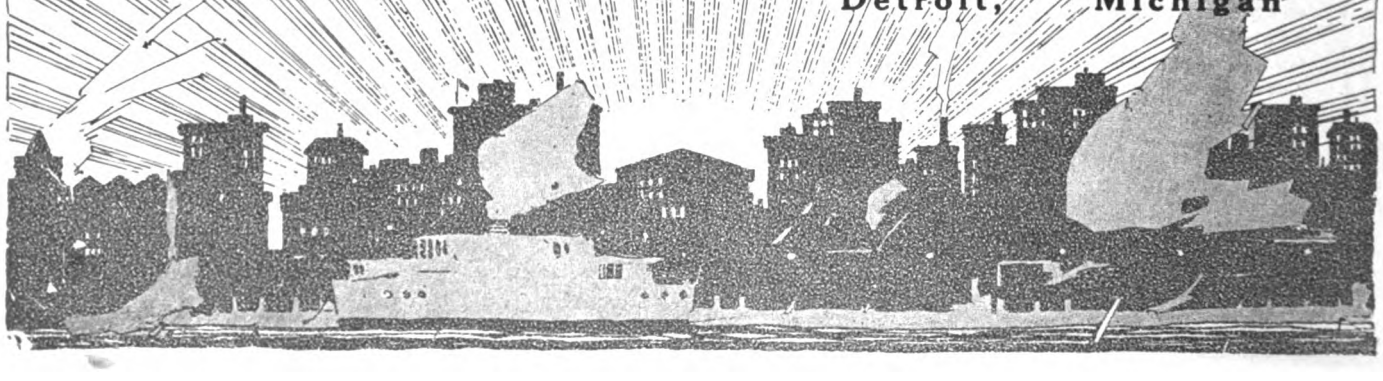
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MOTOR WORLD
for
DEALERS, JOBBERS AND GARAGEMEN

Vol. L New York, U. S. A., Wednesday, February 14, 1917 No. 7

In Three Years

From Nothing To Success

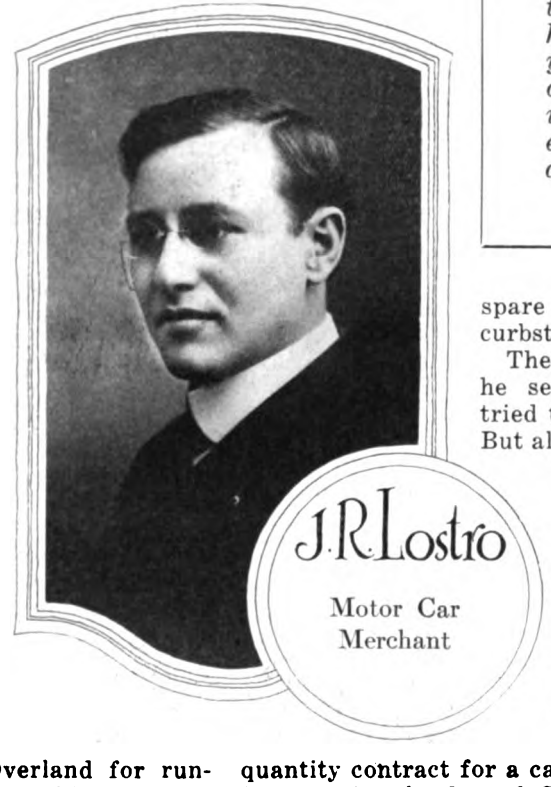
THREE years ago J. R. Lostro started out in Athens, Ohio, a little town of 6500 people, to see if he could start with nothing and make money in the automobile business.

At this year's New York show he turned down an offer of better than $30,000 a year to take a job and give up his business. In three years more he will be the owner of a building which, with site and equipment, will be worth about $100,000.

LOSTRO'S only asset was himself. Prior to three years ago he had been managing a coal mine in Ohio, near Athens. He was such a good manager that he used to act just as though he owned the mine. The owners left practically everything to him—and paid him a good salary, from which he had saved a little money and on which he had made a fair place for himself in the society of the little town.

One day he began reasoning thus: I must be pretty good or these mine owners wouldn't be paying me this salary and letting me run the whole business. There must be some stuff in me or they wouldn't do it. And if I am so good a worker for someone else why can't I be just as good a worker for myself and make more money at it?

That was his start toward his present business. It was his decision to set up in business when he got a chance.



Then came Lostro's big chance. He had bought an old planetary Overland for running around town and out to the mine, which he sold after he had run it a year and made $150 on it. Also, while he was running this car he was impressed by the number of people who asked him where he bought it. They said they wanted one like it and could find no Overland dealer in Athens.

That gave him his first big thought about motor cars. If there were such a demand why couldn't he make money selling cars?

He could.

So he got a 5-car contract from the distributer, in another city, and sold the five cars in 60 days. That encouraged him greatly. He did it all evenings in his spare time. He really was only a curbstoner—but not for long.

Then, this was early in the spring, he secured a 10-car contract and tried to get a 25- or 50-car contract. But all summer he got no cars. There weren't any for him to get.

From the car distributer in Portsmouth, he went home, and bought a garage, which is illustrated with this story. It was a ramshackle little place, and what is shown in this picture is twice the size of the original, for he at once enlarged it.

Then, he began to seek a quantity contract for a car of some kind. He finally got Dodges, Overlands and Coles. He never had sold cars before, but he had just been to the Chicago show and had heard the lecturers and had seen the salesmen, so when he got home he decided to hold a show of his own in that little old garage he had bought.

He cleaned out the building, put up a few decorations and got ready. Then all his salesmen became ill—and he was half-sick himself. But he stuck by the show.

People came in goodly numbers and looked at the cars. He didn't know what to do, but suddenly he had an inspiration, got up into one of the cars and, as he expresses it, began making stump speeches to his visitors. Not only that, he urged them to buy—and buy now.

(Continued on next page)

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Lostro started in the little shack at the left 3 years ago. Now he is doing business in the building at the right—a building which represents an investment of $100,000.

If a man was half decided Lostro went after him this way: "You want a car. You're going to buy a car, so why not have it over with now. Come on, place your order now and have it over with."

Lostro has a persuasive way, earnest and sincere. This was February and the snow was on the ground, but between Friday morning and Monday noon he took 27 orders and got a deposit of $100 on each order—$2,700 in deposits in 2½ days.

And the cars were for delivery as fast as he could get them. Wherefore he began to beg and fight for cars from the factories. He held onto the deposits from 60 to 90 days and had to return $1,800 of them because he couldn't deliver the cars.

This made him rather sore. He wanted to sell the Overland, but he was determined to sell SOMETHING, so he went to the Dodge factory and had just about signed up for a 72-car contract and was on his way home when he missed his train in Toledo. While wandering around he met Sales Manager Harper of the Overland.

In the conversation that followed the situation was disclosed and Lostro was invited to the factory. He went. The result was that he got a 300-car contract and 11 counties.

Perhaps Harper thought Lostro wanted too much. Anyway, he said he would send him 72 cars immediately. Lostro went home and in a few days had lined up 15 dealers in his territory and sold all but 25 of the cars at wholesale. He sold the 25 himself in short order. Instead of 300 cars he sold 550 that year.

One principle he laid down to his dealers was this: "If you contract for cars you've got to buy them on certain dates. If you don't want them don't order them. But if you do order them you must take them when you say you will." And he went out into the territory and helped his dealers sell cars. He showed them HOW.

His territory sold cars summer and winter. Each month he shipped the specified number to his dealers and got the money. Some of them stored until spring, but when spring came they all made money and were pleased.

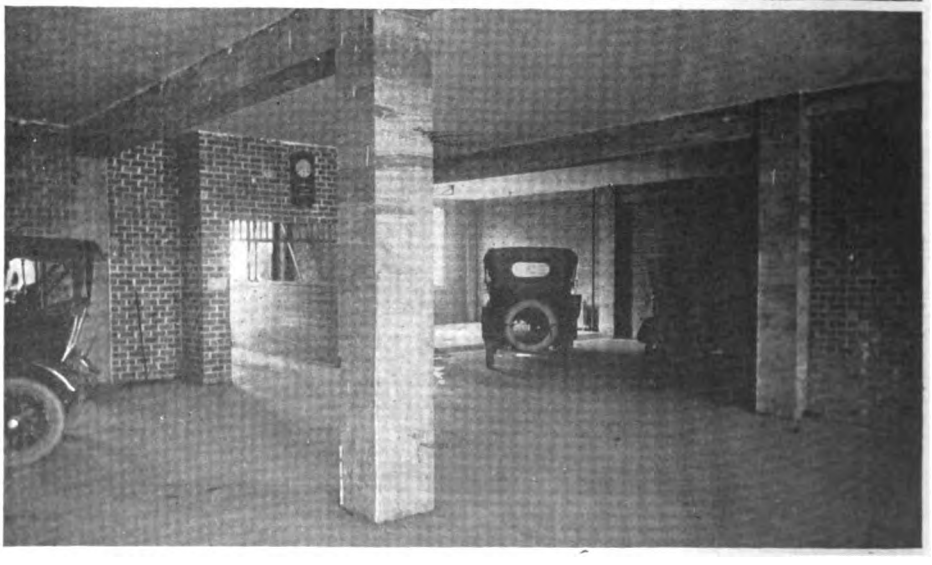
Last fall his delegation was part of the dealer convention at the Overland factory. Lostro got a 700-car contract. On the way home he decided: "What's the use of waiting until we get home to do this business? Let's do it now!"

So the Lostro dealers held a sales meeting in one end of the Pullman car and before the train was far from Toledo he had sold 555 cars and had delivery specifications for 12 months. His year's work was more than half done before he was half way home from Toledo.

How can Lostro get his dealers to do these things?

He does not drive and pound. He





Above is Lostro's new salesroom. It will hold eight cars nicely and it is spic and span and cheerful. Below is a corner of the service station where cleanliness and order have been made the principal consideration

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co-operates. He holds dealer meetings with frequency in his place of business and real sales plans are made and discussed. No dealer goes home without being a better dealer and a more efficient salesman.

Motor World's Winter Business campaign appealed to Lostro, and he used it. He sold cars this winter and helped his dealers sell cars despite the snow.

He uses newspaper ads, and is strong on sales letters. He has his own multigraph machine. He has even sold cars to rural prospects by mail, without ever having seen the man until he called to get the car for which he had sent a check by mail.

He studies his business and keeps it up to date. No new method gets by him—if it is good. He is the manager, the planner, the executive. He hires from 20 to 40 employees to do the detail work while he thinks—and plans—and makes money.

Whereas Lostro's little garage show of his own three years ago was the first ever held in the town, the town now has a regular show. Lostro stages it and the 8 or 10 dealers in town display 27 different cars. He has helped raise the business standards of his home town—he is making Better Business.

From the nothing with which he started he now is located in a new building on the most valuable piece of corner real estate in town. The whole thing is worth about $100,000 and in three years will be all paid for.

For the last 18 months the business has netted $20,000. From June, 1915, to June, 1916, it netted $13,000—$1,000 a month.

His building is bigger and better, he says, than anything in Columbus, and is hardly excelled by anything in the whole State of Ohio.

Used cars are not a problem to him. He trades for a profit, not to kid himself with a padded sales sheet. A trade is what first acquainted Lostro and Motor World. Philip C. Rust, one of Motor World's circulation men, drove up to Lostro's a year ago with a big, barking, roaring Matheson of about 90 hp. and with only bucket seats.

Rust wanted a smaller car. Lostro had an Overland. Neither would let the other man touch his car until the trade was made. Lostro gave $25 to boot. The cars were worth hardly $700 together.

"What did you do with Rust's Matheson?" Lostro was asked.

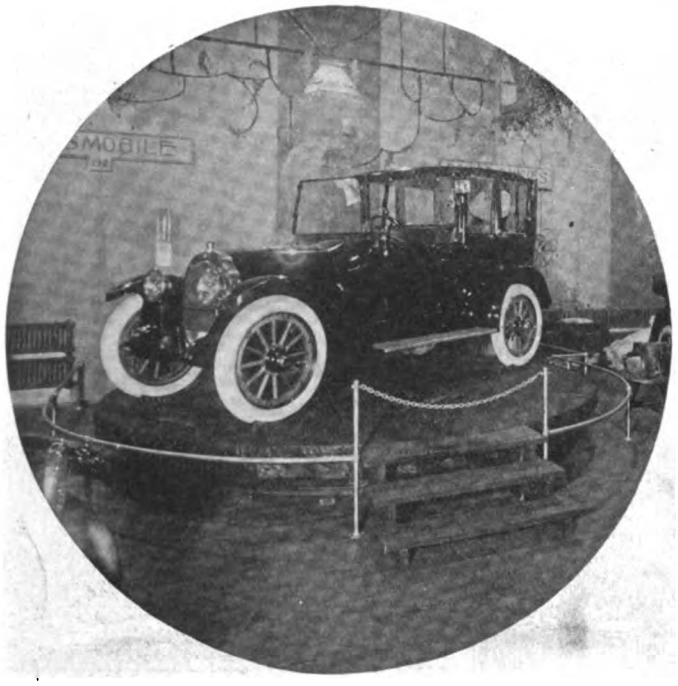
"Oh," he laughed, "I got some new parts, fixed it up, made a racer out of it and made a thousand dollars on it."

He believes a man should make money if he is to succeed in business. So he makes money.



And here is Lostro's accessory store. This arrangement may well serve as a model for thousands of other accessory stores in other cities

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An example of how a show exhibit can be made attractive. Fawkes placed an Oldsmobile town car on a revolving platform and always got attention

Where Exhibiting is *Worth While*

MINNEAPOLIS has put on a real show; people are traveling a mile out of town to see it and the doors must be closed to keep part of the crowd out.

By Ray W. Sherman

MINNEAPOLIS, Feb. 8—The show this winter which beats Minneapolis as a live, human, pulsating merchandising exhibit will step some.

Minneapolis is this week putting on the best show it ever had—and it ranks as one of the best shows ever held anywhere, not excepting New York and Chicago.

The show is held in a four-floor factory building—which is a handicap as a beginning—but a walk through the four floors reveals a wealth of human interest, merchandising ability and attention to the modern merchandising idea.

At the beginning it may be said that Minneapolis has made wonderful strides in merchandising as compared with last year. In last winter's show there seemed little effort to fix up the exhibits and make the show a real show, but this winter's show is filled with decorative effort. In many exhibits there are palms, ferns and flowers, chairs, tables, desks and lamps, and rugs are strewn everywhere. All this throws a life and atmosphere into the show with an effect that is striking.

It has made the show a show instead of a collection of cars.

It is an achievement worthy of emulation by every other show in America.

Why They Go to Shows

And lest the point be too lightly passed over let this also be said: People have wondered why people go to automobile shows when they can see the same cars any day running down the street. Some have tried to answer the question by saying that it is worth 50 cents to an interested man to be able to see all the cars at once without the annoyance possibly occasioned if he enters a salesroom.

That is true—it is worth 50 cents—but the big bulk of the people does not pay its 50 cents to "pick out a car." The people go to a show because it is a show. The show idea appeals to the average man. It is a magnet. It draws even the man who never will be able to buy a car—and he pays his 50 cents. And since it is the show idea that makes the show a success it is essential that a show atmosphere be injected.

This does not mean spectacular billboard stuff, but it does mean pretty and attractive exhibits.

Let it also not be forgotten that the shows are one of the big factors in the growth of this industry. Every town should have a show. And every show *should be a show*, not an imitation of a garage collection of cars.

Attendance Is Far Better

Probably the decorative idea in the exhibits had little to do with the attendance, for until a man went to the show he did not know what was there, but it is true that the attendance this year is running away ahead of that of last year. The first night the money receipts were much more than doubled.

That the show has a seemingly unbreakable hold on the public seems indicated by the fact that Minneapolis and St. Paul are this year going to East Minneapolis—more than a mile from downtown Minneapolis—to see the exhibition.

While the show is not much further from down town than last year's Armory show it savors of "out of the way-ness"—and still the people go. The Mazda Lamp Building used this year has twice as much space as the old Armory used in years before. And while the management figured there would be plenty of room it has been necessary to close the doors for a half hour at a time during the evening to prevent the building being packed beyond the safety point.

Wednesday night there were more than 13,000 people in the building. At 9.30 that evening the throng passed the Oakland exhibit on the top floor at the rate of two a second, 120 a minute, 7200 an hour. The aisles are 10 ft. wide, and still at points it was almost impossible to make progress. The old Armory never would have held this year's crowd.

The Decorative Scheme

The Mazda Lamp Building affords nearly 120,000 ft. of floor as against 65,000 in 1916. It is broken up into ten rooms, but the management has decorated each room in a different scheme, has laid out 10-ft. aisles—something unusual and worth while—and has afforded a good show setting. The walls are done in a wall-board and the overhead lamps are shaded with colored paper.

The larger building has made possible more space in the exhibits, and while it still would be easy to crowd the spaces the dealers have in most cases left plenty of room and have carried out nicely the effect of roominess that helps make the show a real show.

It was stated that the Mazda Building

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had four stories. So it has but one of them is a basement, yet the management did the very wise thing of calling the basement the first floor instead of "basement." It thus eliminated a bad idea Some of the best exhibits are in the base ment, and ushers direct people there as they enter the building.

And There's a Dance Floor

Elevators at two points carry the people up and down, and an unusual feature is a restaurant and dance floor in one of the ten rooms. Ordinarily this feature might spoil a show, but it is so cut off from the rest of the show that it has no bad effect. In fact it is one of the show's attractions.

The dance floor, in charge of a dancing teacher, is packed all the time. The restaurant entirely ran away from the management. The first night the supplies, deemed more than adequate, were cleaned out by 7 o'clock in the evening.

And then there is the accessory show, which will be hard to beat, although it is said that Kansas City plans a wonderful accessory show next week.

A whole room has been set apart for accessories, the walls are done in black and white, partitions divide the exhibits, and the crowd on its way through the show cannot miss seeing the accessories.

Exhibiting has been made worth while for the accessory men, and they seem pleased with the arrangement.

The Ideal Accessory Show

This is the way an accessory show should be run—as part of the car show. There is not the appeal in accessories that there is in cars, and it would be difficult to get the public to flock to a show of accessories only, especially where the admission does not include admission to the car show.





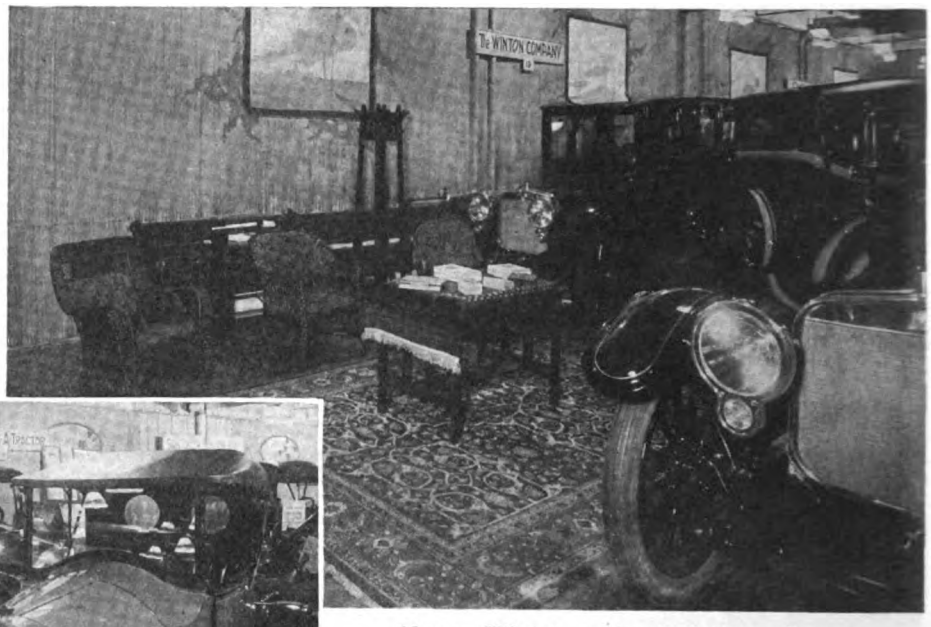
Above—This is one of the ten rooms. Note the broad, ten-foot aisle and the general effect of roominess in the exhibits, none of which is crowded

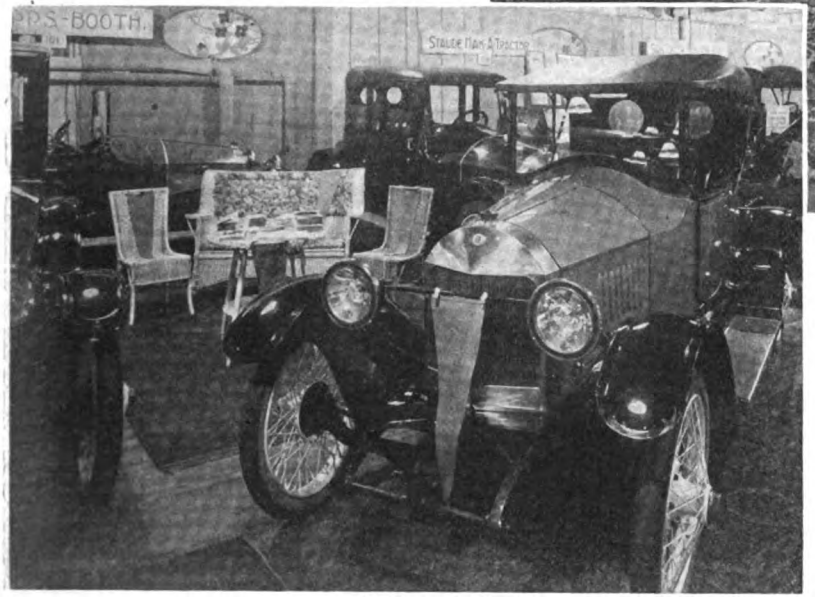
Below—There were two aisles like this in the accessory show. The Industrial show was of a similar order. This is a real accessory show and a model of its kind

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There is also an industrial show. The section where the Mazda Building is located is the industrial side of the town, and one section was given over to an industrial display. Many of the industries never were in any kind of show before and they are enthusiastic over their venture. Many things are shown, from beds to motors and office appliances.

There are twelve sections, or rooms, in the building. The only ones not used are one for the storage of materials that were in the building and another for the painters and property men.





Above—Winton achieved that touch essential to a car of the Winton class

Left—The Scripps-Booth exhibit looked "Scripps-Boothey". Not much was required; just furniture and a few rugs

Snow Spells Prosperity For The West

For It Means Big Crops and Plentiful Money

MINNEAPOLIS, Feb. 6 — Fallow fields for the sale of automobiles in 1917 are found in territory fed by factory branches and distributing agencies situated here. And what is more, the people are able to pay for the cars they buy. One big section of this ground ripe for tillage by automobile manufacturers and their selling agencies is the farmer class. Just now it is the farmer that is most open for prospecting work. The latest automobile census goes to show that in this particular territory there are at least 216,936 farmers who have not yet fallen into line and become possessors of motor cars. This is aside from reorders and additional orders by farmers who already own automobiles.

The harvest is ripe, for even conservative branch managers and dealers in this city estimate that to these farmers and to other probable buyers there will go out in 1917 about 90,000 cars variously estimated at an average cost of from $765 to $900 each. The first figure will give a valuation of $70,000,000 business for the year, while the more liberal estimate is $84,000,000, as compared with 80,000 cars in 1916 from this market.

Money Is Easy in Northwest

Bankers are a unit in saying that this territory, which for sales purposes may include besides Minnesota the two Dakotas, eastern Montana, western Wisconsin and northern Iowa, is in prosperous condition. Although the crop as a whole did not come up to the figures for the bumper harvest of 1915 the average price was higher, which nearly made up the difference. Money is easy and collections are good—in many cases above the average.

As for the future: In 40 years there has not been such a snow as in January close to the Twin Cities, and in other parts of the district equally heavy snows are reported. This presages excellent crops if the snow disappears slowly in the spring. Gradual melting of the snow overcoat of the Northwest means that it will filter through into the soil, creating a deep moisture and causing grain to grow deep as preparedness against possible dry weather before next harvest.

Here is the estimate of a big branch manager who, by the way, has sold his allotment: "Montana is better than ever as an automobile sales district. In fact, it is almost twice as good as ever before. North and South Dakota are not good as in the past, and Minnesota has not been quite so good, yet there is a fine business in these States.

Calls Montana "Car Crazy"

"Montana is absolutely car crazy and they have the money out there to buy cars. We are selling more big cars in Montana than anywhere else. The trouble is to get cars to deliver. We have none to sell."

It is this condition of shortage that led Frederick E. Murphy, secretary of the Automobile Trade Association, to say that the importance of the present show is to key dealers and agents up to the situation that confronts them. He said the situation is serious enough to require the presence in Minneapolis of every man engaged in the automobile business in the Northwest, as there is

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to be a car shortage as sure as fate. "Dealers can sell all the cars they can deliver this year, if they can get them. The automobile census, I am certain, gives proof that the automobile show of the Twin City dealers represents the greatest distributing center of automobiles in the world."

Deposits Depleted to Move Crops

Although bank deposits may be a little off, J. A. Latta, vice-president of the Northwestern National Bank, and J. S. Pomeroy, vice-president of the First and Security National, regard that as easily understood. It is a result of crop moving conditions. The 1915 crop was pretty well moved out when the biggest clearings were shown a year ago and the 1916 crop was smaller, although moving at record prices.

Banking conditions at the Twin City center will reflect the situation throughout the ninth regional reserve bank territory. Population of Minneapolis is 363,454 and of St. Paul 247,232. These are Federal estimates. Bank clearings in Minneapolis for 1916 were $1,469,874,000 and for the Twins were $2,254,865,100, as against $2,003,460,332 the year previous.

Bank transactions in Minneapolis for 1916 were $5,440,770,000. On this basis the St. Paul estimate, no record being kept, will be $2,900,000,000, or total $8,340,000,000. Aggregate deposits in Minneapolis footed $172,361,943 at the last call compared with $169,620,223 on Dec. 30, 1915. St. Paul figures were $116,111,644 and $105,143,027.

Another straw to show the financial wind is that deposits in the Minneapolis Postoffice from outlying banks in the year were $8,866,652, and the total business of that postoffice for 1916 was $22,000,000, a gain of more than 20 per cent. This gain is a regular end-of-the-year story from that office.

Chairman John H. Rich, of the Federal Reserve Bank, has shown gross earnings for the bank in the second annual report of $238,000 and total resources of $37,487,000, compared with $99,600 and $16,466,000 in 1915. He said: "Crop moving demands required a total of $8,500,000, which was promptly put into circulation for handling grain. While the crop was far short of the 1915 crop the unusually high prices required a total issue for this purpose, which was $500,000 in excess of the amount required to move the previous crop."

Bankers See Prosperous Future

E. W. Decker, president of the Northwestern National Bank, in the January Review writes: "On the whole the tone is decidedly cheerful. High prices have undoubted influence on the sales totals. Bank deposits and interest rates show a seasonal slight decline. January sales, as reported by Minneapolis wholesale and retail establishments, are ahead, in most lines, of the corresponding time last year. Collections are in the main satisfactory."

In general there may be gathered from this why automobile dealers as a class are expecting a tremendous year in sales, and why the increased figures for the tenth annual automobile show this week in the National Maza Lamp building with its four floors and ten automobile display sections.

Minneapolis Show Larger in Every Way

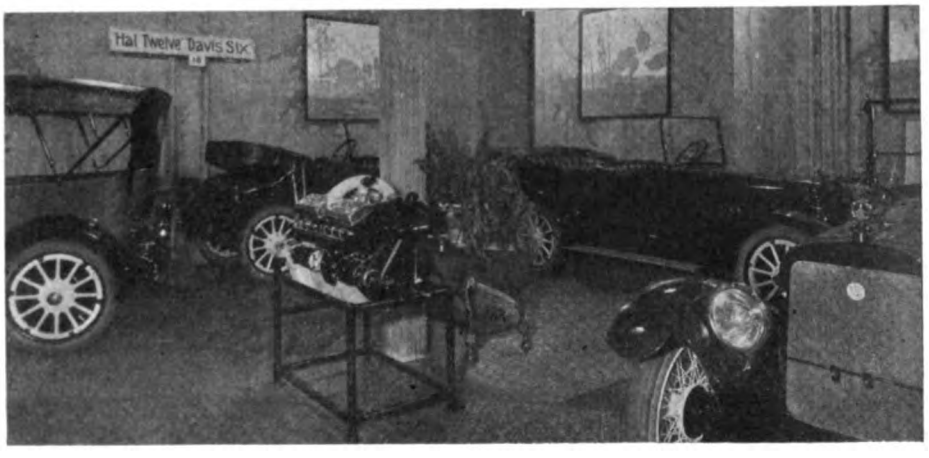
The floor space is 119,000 sq. ft. as against 65,000 in 1916. There are 238 exhibits, which is compared with 148 exhibits last year. In the pleasure section there are 72 car exhibitors, who show 300 cars. Last year there were 203 cars displayed by 49 dealers. In the accessory division are to be 74 exhibits as against 48 last year. Thirty-six commercial car exhibits are on the books, compared with seven last year, and there are on show eight tractors; last year none. An additional interesting event is the use of 13,600 sq. ft. of floor space by 64 East Side manufacturers to demonstrate their business. All exhibits in the show are estimated at $3,000,000 value.

The crop handling report for 1916 gives some idea of buying possibilities by residents of this vast territory.

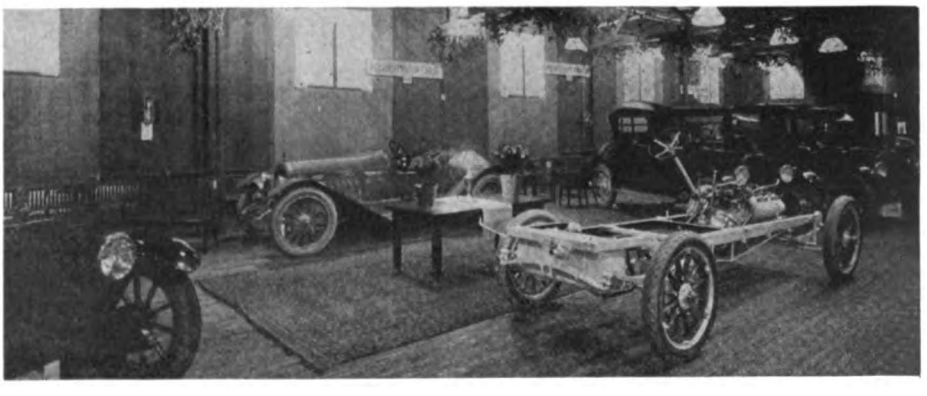
Farming, dairying, wool growing, live stock raising, manufacturing and iron mining may be considered among leading industries of the Minneapolis trade territory. They are all active. Laboring men have been receiving advanced wages, particularly in mining and manufacturing. This money is all going into circulation due to high prices of living necessaries. It is estimated more than $3,500,000 a month is being paid in wages in the Butte and Anaconda district of Montana.

Select Minnesota creameries pay farmers in a year about $30,000,000 for butter fat. Butter and milk add $40,000,000. Live stock sold off the farms give the farmers $30,000,000 up in a year. The hen division is estimated to pay more than $30,000,000. It was estimated by Farm, Stock & Home that the combined dairy and livestock receipts of Minnesota and the Dakotas are about $200,000,000 a year. It figures estimated cash available at $684,000,000, to which might be added the estimate by the Montana agricultural commissioner of $94,936,090 crop value in 1916 for that State.

In the four principal States the total crop of wheat, corn, oats, barley, rye and flax amounted to 963,561,000 bushels, by Government estimate valued at $555,572,000.



Hal and Davis worked in a motor display in a manner that did not jangle with the harmonious setting

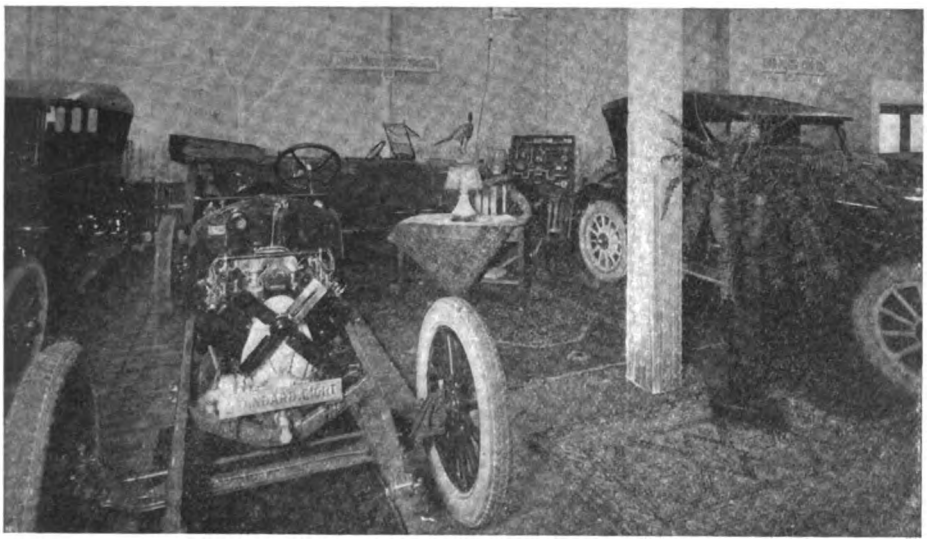


Peerless did what almost any other dealer can do by using a rug, furniture, flowers and a little room

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Frederick E. Murphy's Mitchell exhibit was pretty and attractive with a business office and stenographers at the back



Johnnie Johnson's Standard Eight exhibit was one of the most attractive at the show

It is a sign of the times that more than $1,500,000 is being spent in Minneapolis in automobile buildings in 1915 and to date. This includes the Overland $500,000 distributing plant in the Midway at St. Paul and the proposed Maxwell plant on the Minneapolis side of the line to cost $300,000, also the Overland retail plant in Minneapolis costing $150,000. To this might be added the new plant of the Twin City Four Wheel Drive Co. near the Overland distributing building in St. Paul, costing about $250,000. In branch and retail agency buildings about $450,000 has been spent.

Several new car, tire and truck agencies have entered the field. The Kelly-Springfield enlarged its agency to a branch. The Stewart-Warner Speedometer Co. opened a branch, also the Imperial Auto Supply Co. The Ahlberg Bearing Co. opened a branch, and as did the Chalmers company. The Four Wheel Drive Manufacturing Co. was formed to make the Ware truck in Minneapolis, and this bought the W. S. Nott Co. factory.

At least 25 more companies were formed for automobile and accessory business, with a total authorized capitalization of $1,250,000.

Farmer the Hope of the Motor Car Maker

Summing up the trade possibilities the big hope of the manufacturer in the four Northwestern States is the farmer. This is demonstrated strongly in the avidity with which automobiles are snapped up in Montana by the farmers and grazers The automobile has become an economic necessity. It is shown conclusively by the fact that out of 155,000 farmers in Minnesota more than 62,000 own automobiles, and that half the farmers in these four States own cars.

The automobile has diminished distances in the great Northwest, has removed barriers heretofore considered impenetrable, has proved a worthy factor in educational, social and commercial progress. So the automobile has come to stay. The need is recognized and now the people have the money to buy cars.

Northwest Dealers Fear Car Famine

Will Need From 20 to 30 Per Cent More Than Last Year —Some Storing Cars

MINNEAPOLIS, Feb. 9—It is hard for the Minneapolis distributers to estimate how many cars they will sell this year.

They are working against hope—hope that the factories will turn the cars out as fast as the Northwest wants them. That was one difficulty last year and bids fair to be in some measure a difficulty this year.

There isn't a distributer who doesn't say that he can sell from 20 to 50 per cent more than he sold last year—provided he can get the cars. This country—especially the countrymen—are keen for cars, and they have money; the crop was short, but the price was long, so they are well off financially.

Dealers Storing Cars

Those who can get cars are storing them this winter, and more than ever before the country dealers are storing cars. They have learned that not taking cars now means lost profit when the sun has chased away these winter snows.

In carrying these winter cars some use the financial companies' time payment plans. Others are helped by the distributer. Here is one example of the latter:

Cost of car	$1,000
Wholesale price	800
Dealer pays now	200
Distributer lends	600
Distributer takes mortgage	
Dealer pays	6 per cent
Distributer borrows at	5 per cent

Otherwise small town dealers might have to pay 10 per cent. As it is, the distributer makes perhaps a slight profit on handling the time sale and the dealer gets the cars at 6 per cent for four months or until the car is sold. The distributer can borrow at 5 per cent where the dealer can't.

And the distributers are taking more interest in the welfare of their dealers. One distributer says: "If I can't find a dealer I make one. I get a man who knows cars and a man who has money, and they form an agency with a salesroom—no curbstoners. Then I make my road man directly responsible and he has to keep in close touch with this agency and see that it is run on a business basis and makes sales. In that way this makes a good dealer for me and the dealer makes money."

One factor in car selling is that the farmers are in many cases buying new cars and hanging onto the old vehicles.

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1916 Reports Show Light Wheat Crop

Shipments Decrease 12,000,000 Bushels—Imports Checked by High Prices

MINNEAPOLIS, Feb. 5—Crop figures are now obtainable for the calendar year ending Dec. 31, 1916, as well as for the fiscal or official Chamber of Commerce year ending Sept. 31, 1916. Following are comparative figures:

Crop	1916 Bushels	1915 Bushels
Wheat	170,208,650	169,981,320
Corn	5,733,680	14,880,260
Oats	49,467,830	21,924,230
Barley	45,852,130	28,538,400
Rye	6,890,650	5,210,190
Flaxseed	7,461,210	7,199,150
Flour shipped bbls.	21,300,994	

Figured by Edward Kehoe of the Chamber of Commerce as a primary market, Minneapolis, in the calendar year of 1916, received 234,891,570 bushels of grain as against 235,977,890 in 1915. It will be noticed that, at the end of September, 1916 had a heavy lead. After that the extra high price of wheat and car shortage brought down the importation. Shipments of grain dropped off 12,000,000 bushels. The light wheat crop is shown in the following table:

Crop	1916 Bushels	1915 Bushels
Wheat	131,947,520	142,669,370
Corn	7,137,260	10,777,330
Oats	42,535,710	33,544,650
Barley	37,271,590	36,593,780
Rye	7,202,030	6,236,660
Flaxseed	8,797,460	6,148,970
	234,891,570	235,970,760
Flour, bbls. ...	900,648	756,688

Shipments were tabulated as follows:

Crop	1916 Bushels	1915 Bushels
Wheat	49,278,530	55,243,170
Corn	5,025,026	9,465,840
Oats	40,825,420	33,054,470
Barley	32,484,720	34,556,410
Rye	5,557,510	4,324,630
Flaxseed	1,160,740	983,340
	134,331,946	139,627,860
Flour, bbls	19,127,620	19,072,500
Linseed oil, lbs.	128,066,594	118,337,776
Oil cakes, lbs..	219,345,910	296,255,006

Minnesota Has 138,000 Cars

MINNEAPOLIS, Feb. 5—It was estimated to-day by J. A. Schmahl, secretary of state, that by the end of 1917 automobile registrations in Minnesota will be 200,000, and perhaps will pass that mark. He said to-day there are more than 138,000 cars in the state, a figure he prophesied one year ago. Five years ago there were only about 17,960 machines.

License tags are sold for three years at $1.50. The last triennium began in 1915. For the first two years returns to the state were $241,000 as compared with $144,531 for the entire preceding 3-year period. Beginning next year license tags will cost $5 for three years. This will be prorated to $3.50 after Jan. 1, 1919, and $2 for 1920. In the first period of three years 66,000 licenses were sold.

In 1915 licenses numbered 99,000 and in 1916 46,000 were issued. The rate of gain in the state is indicated in round numbers as follows: 1909, 7,000 cars were registered, the first year of the law; 1910, 12,500; 1911, 19,000; 1912, 28,400; 1913, 45,800; 1914, 68,500; 1915, 94,000; 1916, 138,000 were on the books.

Railroads report that they carried into the city 5,360 carloads of automobiles, an increase of 44 per cent over 1915. They shipped out of the city, in 1916, into trade territory 9,360 carloads, a gain of 40 per cent. Hundreds of cars were taken out under their own power by agents and owners.

As to a Show Circuit

MINNEAPOLIS, Feb. 9—It is suggested by one distributer that it would be good business to have a better circuit of shows and for every manufacturer to have at least two sets of show cars for the circuit. This would enable an exhibit to stay until the last night and be all set up by the first night of the alternating show. Each set of exhibits would make alternate shows.

Also this would save money, for cars are now being shipped by express to get them through in fast time. It cost one dealer $202 to get his show cars from Chicago by express, whereas, he said, with a week to get them he could have shipped by freight at a cost of about $75. Show cars, he stated, can always be sold at list or a little better and do not represent a loss, when the amount of publicity received is considered.



Kissell did well indeed. The rug under the furniture showed up much better than it does in the picture



The Mack dealer deserves a lot of credit. He made a plain 3½-ton truck something worth looking at—and thousands stopped and admired it. There is a business office behind the truck

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Snowstorm Hurts Minneapolis Show

All Traffic Blocked By Blizzard Many Dealers Cannot Reach City

MINNEAPOLIS, Feb. 8—The worst snowstorm that some sections of the Northwest have seen in thirty years has hurt the Minneapolis motor-car show.

It has delayed exhibits and, worse yet, has kept many dealers from attending the exhibition.

The man who never has seen the Northwest in the grip of winter has no conception of what it means.

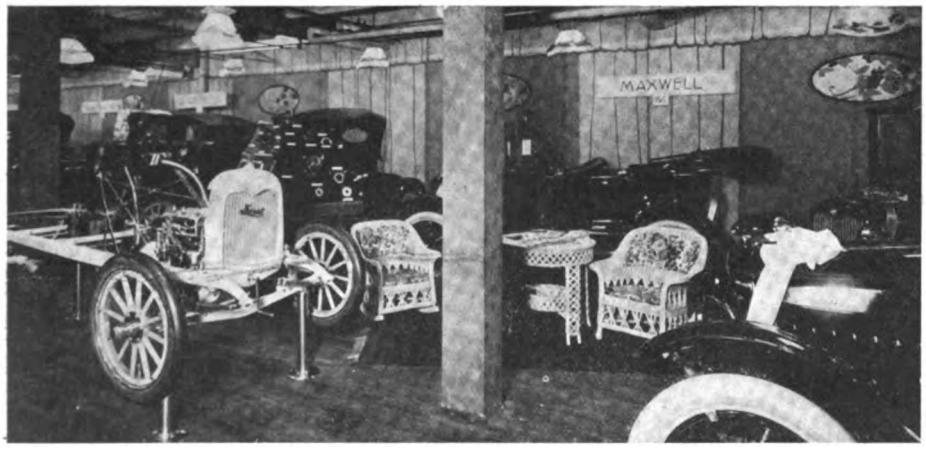
Imagine snow drifted deep and hard; no trains in some towns for two weeks; no freight shipments in or out for longer than that; no newspapers; no news from the outside world except what is secured over the telephone from Twin City newspaper offices; men, women and children frozen within calling distance of home; main-line trains abandoned entirely for several days; snow plows rendered useless and rescued only by shovel gangs; men refusing to shovel even at 45 cents an hour; big cities in milk and food and fuel famines, and every power powerless to do a single thing.

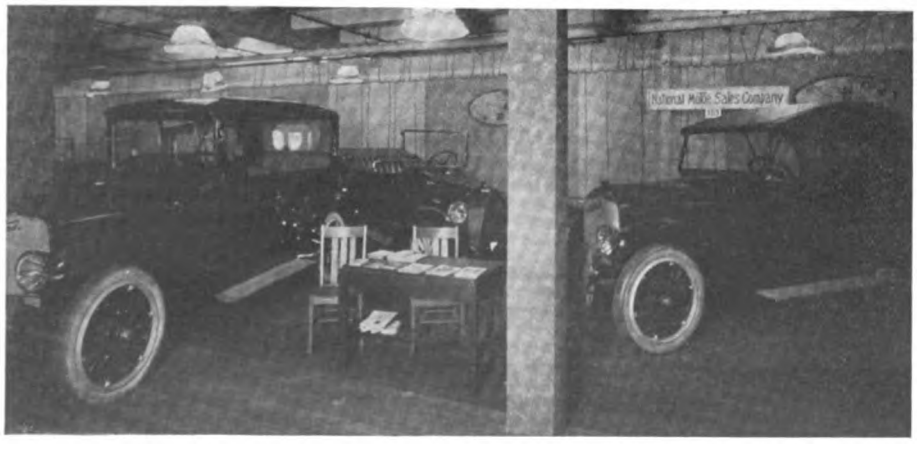




Above—The Pure Oil Co. always goes in for a bang-up exhibit. It did it last year and again this year

Below—Loomobile set up a cosy corner at the back of its exhibit which added to the atmosphere that this car requires





Above—Maxwell, in the show for the first time, carried out its sales appeal of a small, low-priced car yet with "class"

Below—The National dealer injected an atmosphere of business and an air of neatness through rugs and mission furniture

That is a partial picture of the Northwest during the recent attack of winter.

Trains Seven Hours Late

It sounds ridiculous, but it is true that the Burlington train on which the MOTOR WORLD man and several other automobile men came to this city last Sunday was stalled in the snow between St. Paul and Minneapolis for 6½ hours.

Snow had filled a cut and one train had stuck fast. Other trains were let in behind this until there was a long line of them. It is only ten miles from St. Paul to Minneapolis, but all these trains were isolated in a more or less deserted section between the two biggest cities in this part of the world. It was 15 or 20

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below zero and a gale raged. The 150 shovelers who dug the trains out froze their faces. Trains froze fast to the rails. One engine gave steam to its train until it had only 11 in. of water, and before the train made Minneapolis the water gave out. The train made it because it had two engines, for nearly all trains have two and some three engines.

Many of the exhibits at the show include cars from the Chicago show shipped by express. Most of them were late and some exhibits have not arrived yet. Automobile men have been as much as 30 hours late coming from the Chicago show.

As for the country dealers it is hopeless for hundreds of them to try to get to the show. They are on branches of the east and west main lines, and they may not see trains for days yet.

Troubles of Country Dealers

J. H. Meurer, a Mitchell dealer, drove 14 miles with a team from Nicollet, Minn. to Mankato to get a train for the show. He wanted to go to the famed Mitchell sales dinner. He left home at 11 a. m. Tuesday and reached Mankato at 2.15 p. m. He left Mankato at 6.30 p. m. and reached Minneapolis at 11 that night.

George A. Greene of the French Battery & Carbon Co. with headquarters in Minneapolis was stuck in Aberdeen, S. D. By telegraphing he found a train might go through North Dakota on the Great Northern, so he and some other traveling men and dealers filled a Pullman car at Aberdeen, S. D., were hauled to Breckenridge, N. D., and hitched to a main-line train. Had they not done this they might have been in Aberdeen yet.

Moreland and Anker, dealers in Austin, Minn., 80 miles out, started for the show on the first train they had seen in seven days. They were due Monday morning but arrived at 2 o'clock Tuesday morning. They have had no freight in ten days.

Mrs. Bohn E. Fawkes wife of the Olds dealer in Minneapolis, started for Los Angeles last Wednesday and was due to arrive Saturday. Friday noon she telephoned to her husband from a little town 85 miles out of Minneapolis. The next he heard from her she was passing through a little Nevada town Tuesday afternoon.

One tractor exhibitor has a sign up to the effect that his exhibit is snowbound somewhere. He sits in the exhibit and waits.

The people in some of the small towns where trains have been stalled have generously cared for the passengers, who otherwise would have been eatless and heatless.

If the wind—which has gone down—stays down, and if the temperature—which has gone up—stays up, some of the snowbound dealers may get to the show, but the distributers are not exceedingly hopeful. A regular feature at show dinners is a handful of telegrams from snowbound well-wishers and enthusiasts.

The East and Middle West has snow and cold, but if it wants to develop some optimism over its condition all it needs is a trip to Minnesota, the Dakotas and Montana when Old Winter is in a real grouch such as he is just getting over.

He sure was sore at something. Following are some who reached the show:

Should Old Acquaintance Be Forgot—

HERE are brief bits of history from the lives of some of the old-timers attending the Minneapolis show. Do you know any of these men?

Isadore Hanten, who operates the Hanten Machine Co. in Watertown, S. D., was born in Luxemburg, which now is in the European war area. His family is one of the old ones in South Dakota and has been in the implement and threshing machine business. Hanten, who now sells the Reo, is said to have been the first man to demonstrate the easy control of a traction engine by operating it on a teeter platform.

"Doc" Ellis is here, representing the National. He used to be a dentist in Detroit, but he saw less pain and more money in the car field.

George E. Duis now distributes the Reo out of Grand Forks, N. D. Years ago he was sales manager for the Gier Scott threshing machine and then distributed it in North Dakota, which furnished his stepping stone to the car industry.

"Rosy" Rosendahl was and still is a stock broker in Duluth but that doesn't interfere with his Reo business. He has been active in many ways and is credited with having organized the Butte & Superior Mining Co.

F. H. Akers is known to many show-goers through his position as district organizer for the Reo in the Central and Northwest states. Years ago he went to the Michigan Agricultural College and was a likely candidate for big league baseball, but he forsook this sport for the sport of riding the beam of an Oliver plow at hundreds of fairs. From plows he went to the motor car, as it seemed to furnish easier riding than a plow.

J. C. Brandimore, alias "Brandy," is the one touch that completes a show. He rambles for the Reo, and has covered all of the United States and part of Canada in his five years of Reoing. He used to carry 300 pounds of samples for a candy company in Lansing, Mich., his home town. Then he discovered the motor car some 6 years ago and saw that the only sample case required was a brain bag, so he dropped the 300 pounds of candy samples and took on 60 pounds of avoirdupois. He was first with the Buick, then the Olds, and for 5 years with Reo. He weighs 210, wears a felt hat, is 37 and has never stayed long enough in one town to get married.

G. A. Lewis, Mankato, Minn., runs the Mineopa Garage and sells the Reo and other cars. He used to be in the hardware and sporting goods business with his father in Mankato and is some duck hunter. He claims to be the only man who ever shot a duck at such close range that he strung the bird on the gun barrel.

Eddie Gorman does the Northwest for the Cadillac. He is an ex-Detroiter. He has graduated into sales road work from service work and makes all the Western shows.

O. G. Kenney, Colfax, Wis., sells the Mitchell and Maxwell, runs the M & M garage, is president of all the Norwegians in northern Wisconsin, is 6 feet 4, and has something to do with everything that happens within a radius of 40 miles from Colfax.

Charles Compton, of the White, comes in from the country now and then to Minneapolis to get his mail. He has covered this territory for the factory for two years. He used to be in the gas engine business in Des Moines until two years ago, is said to know every deer by its first name, has the address of every fish and is known everywhere by a vigorous crop of bristly hair.

W. A. Sims, Grand Forks, is quite a fellow in his own home town. He is president of the Sims Automobile Co., sells the Buick and Cadillac, is president of the dealers' association, manages the show, is one of the town's old-timers and handles a couple of tractors. If a farmer won't trade a horse or a cow for a car Sims sells him a tractor.

Harvey Haines, now with the R. C. Smith Automobile Co., is a figure in the trade in Minneapolis. Away back in 1906 he had the agency for the White steamer and was a big dealer. Then he sold out. Since then he has had various connections with the trade. But before he sold cars he was a bicycle man, hailing from Syracuse, N. Y., once a bicycle center. He has been in the Northwest 24 years.

J. O. Rennings, who sells the Velie in Duluth, used to be a railroad engineer on the iron range in northern Minnesota. Then he started a garage and livery and has sold cars two years. Mrs. Rennings is also quite an automobile man and takes an active part in the business.

Owen Gebhardt used to be with the Chevrolet in Minneapolis but he and his stepfather, Adolph Wiedenhoupt, have taken over the Motor Inn in Owatomie and are selling the Chevrolet there. Wieden—

(*Continued on page* 43)

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Mr. Reilly Says:—

"What Gets My Goat is the Salesman Who Makes No Effort to Take Care of Exhibit Visitors.

"I Wonder How He Figures He Is Going to Get the Big Throbbing Story to the Public If He Stands There Motionless."

The Man Whose Legs Were Wood

"TOMMY," said Reilly, as they emerged from the Sennett exhibit at the Middleport show, "if you ever develop a pair of wooden legs like that salesman I'll saw them off and use them in the fireplace at home. They'd just about fit."

"I hope you don't have to," laughed Tommy Trumbull, looking back into the exhibit where a salesman stood, looking for all the world, so far as attitude was concerned, like one of those old-time wooden Indians which used to be the mark of the cigar store before the trust brought red windows into vogue.

The salesman stood—and that's about all. He was neatly dressed, he wore no hat, his hair was combed, his face was clean shaven, he stood up straight and erect—but for all the good he was in the exhibit he might better have been moved out to make room for a display of parts.

He just stood. One might suspect he knew he was a pretty good looker and didn't want to spoil his pose. But whatever the reason, he stood and posed while people walked into the exhibit, looked at the beautiful new Sennetts in their gay show paint and wandered out again entirely unmolested. He never approached a visitor.

He just stood.

Once in a while he moved a short distance. And then he stopped and stood some more. But most of his time was spent in standing like a sentinel or a hitching post or a duck frozen in the ice. As a stander he was without a peer.

"I often wonder, Tommy," said Reilly, "what some salesmen think they're for. Take that lad in the Sennett exhibit, for instance; what does he think he's there for? If all he is supposed to do is stand around and watch the exhibit to see that no one runs away with the cars he might better be replaced by a boy at five dollars a week. The boy could do it equally well and for less money.

By Ray W. Sherman

"If he thinks he is there to sell cars I wonder how he figures he is going to get the big, throbbing Sennett story to the eager, money-flush public if he stands there so motionless that the visitors think he is part of the exhibit. He hasn't made a move to get in touch with a single visitor. He hasn't been asked a question, largely because he stands away from the cars so as not to be in the way. He doesn't get over near the cars where people can look and ask.

"He's a negative type of salesman, Tommy, and the shows and salesrooms of the country are filled with them. There are countless good salesmen, of course, but one reason why the average sales salary is so small is that there are men like that Sennett man who don't develop the goods that would justify their being paid any more.

"A salesman is in an exhibit, Tommy, to get business—if there is any. And he is supposed to represent the dealer who is showing the cars. Instead of standing like a wooden-legged man he should conduct himself like a real salesman and make an effort to get in touch with peo- make an effort to get in touch with people.

"Of course, it wouldn't do for him to rush madly up to every one who walked in the space, but he should move over toward each man or group of men that enters and seems to hesitate before any part of the exhibit. When a visitor hesitates he has seen something that has attracted his attention, and if his attention is arrested that is the first step in the sale. After that the salesman should get in touch with the visitor and see if he can't carry the sale to its next steps.

"It is possible to see a man for the first time in your exhibit and get his money before he goes out.

"What gets my goat, however, is the salesman who makes no effort to take care of the exhibit visitors. He stands at the back, at one side, or even right in the center. If you go up to him and ask him something he will answer you, but even then he doesn't make any real, intelligent effort to make you the other half of a sales proposition."

"I suppose he figures that show-goers are only poverty-stricken deadheads and couldn't buy a car in a million years," replied Tommy. "And he perhaps believes that it is wasted effort to try to sift the wheat from the chaff and get any results out of the show."

"What's he there for, then?" demanded Reilly.

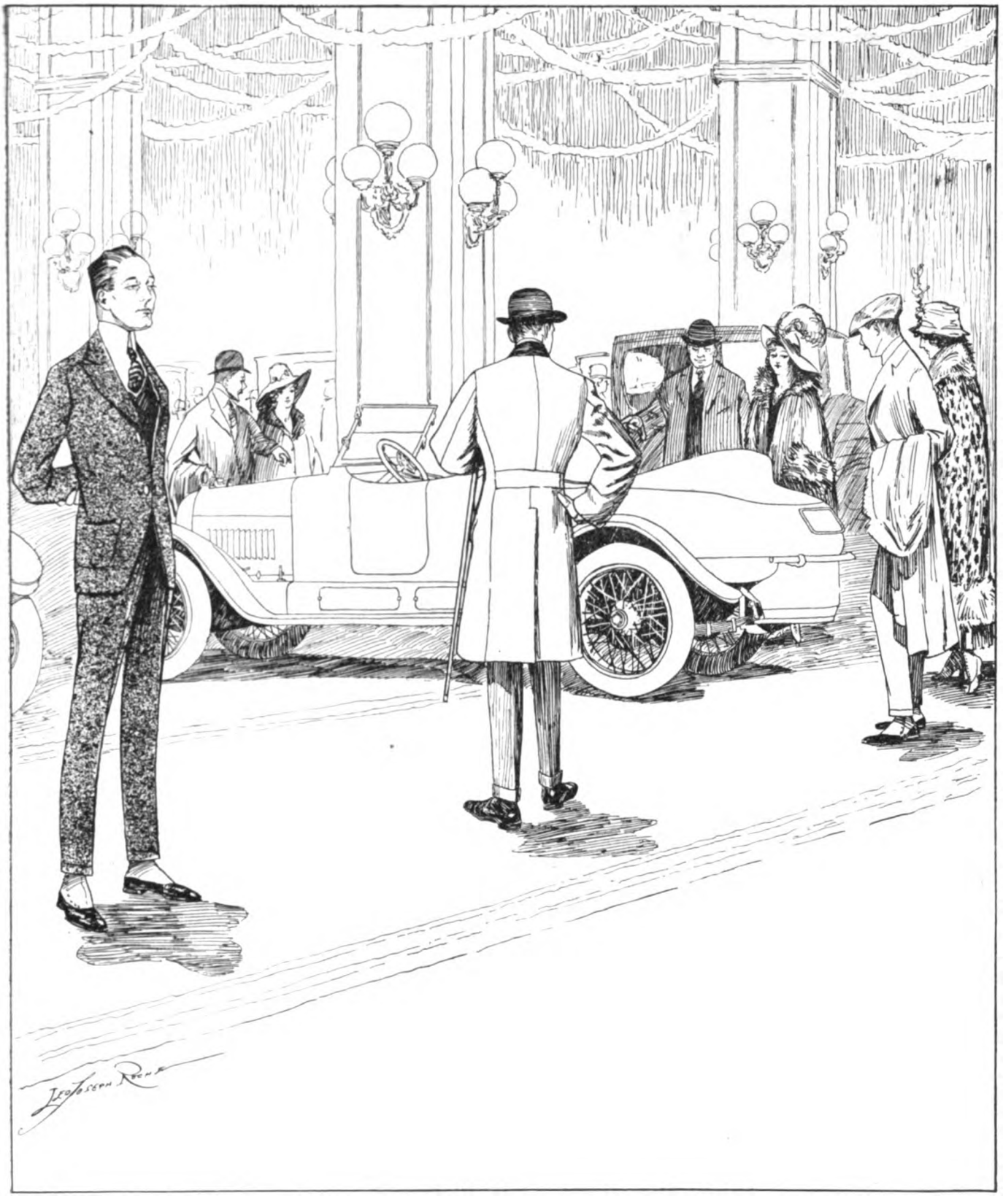
"I suppose the boss sent him," laughed Tommy.

"Yes, that's just it!" retorted Reilly. "The boss knows there is value to the dealer in the crowd that throngs the show and so he pays a salesman good money and tells the salesman to go to the show and represent the car. The salesman takes the good money and goes to the show and stands around like a wooden man. He must be a darned conscientious individual to take money under such false pretenses.

IF you would like to know what Reilly would do in certain circumstances or how he would solve specific problems, write to the author. Reilly is a bear for work.—Editor.

"If he's going to represent the car why doesn't he go at it in a salesman-like way?"

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"— where a salesman stood, looking for all the world, like one of those old-time wooden Indians."

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Winter Business

There Is Time Yet! Hurry!

In the Last 3 Months

WHAT HAVE YOU DONE?

Opportunities are Flying By

THE past three months have been opportunities for YOU to get Winter Business. Winter has created all sorts of arguments for repairing, accessories, car sales, tire repairing and sales and other branches of your business.

What have you done with these opportunities? If you have cashed in on them, fine business! Spring will come and will bring SOME business, but you can get some NOW if you GO AFTER IT! Get busy!

Send Out These Letters, NOW

Tire Letter

Dear Mr. Prospect:

Those little cuts in your tires may cost you money and trouble later on.

How do we know you have cuts in your tires?

We answer: Did you ever see a tire that had been run any distance that didn't have little cuts in it? We don't believe any one did.

These little cuts don't prevent running the car until they result in a blow-out, and so most of us neglect them TOO LONG.

The little cuts let in dirt, the dirt works down into the tire and makes the cut worse, dirt and water loosen the tread from the fabric, a weak spot develops and then BANG! A costly repair or a new tire.

While you are waiting for spring—which is just around the corner—we suggest that you let our tire expert go over your casings and ascertain their condition. If there is any service we can render he will advise you, and if you have them fixed you will be ALL READY for the first spring day. When that day comes you won't want to bother with getting tires or anything else fixed.

Getting your tires fixed now is like having your ticket in your pocket when you go to the station to take a train. It saves last-minute rush and delay.

Our phone is James 1923. Our tire expert will inspect your tires at your garage if you prefer.

Yours truly,
BURT'S GARAGE.

Car Sales Letter

Dear Mr. Prospect:

You are going to be anxious to start driving as soon as the warm sun of spring dries the roads and puts the fever of the country into every man's veins.

If you can't get away as soon as the weather permits you are going to be disappointed.

When you want your car you'll want it badly, and if we can't furnish it then you may think unkindly of us. We certainly don't want you to do that.

And if you can't get a Sennett when you want a car you may buy some other—and we don't want you to do that because we want you to be a Sennett owner. We know you will enjoy a Sennett and Sennett service more than any other combination you can find.

In order that you may get the fullest pleasure from your motoring, we suggest that you ask us as to the latest date we can deliver you a car. From now on orders are going to come in more rapidly and when the orders come faster than we can get cars some of our patrons will be unable to get Sennetts.

We don't want you to be among that number and we're sure you don't want to be. It will place you under no obligation to drop in, write or phone (James 1923) and ask us these things:

1—When we can deliver a Sennett.
2—What the new car is like.
3—What our service means to the owner.

Yours truly,
BURT MOTOR CO.

Overhaul Letter

Dear Mr. Prospect:

How's your car?

Have you looked it over lately?

Is it in tip-top condition for the heavy work it will get as soon as spring opens up and you get out onto the roads?

Is it giving full power?

Are the cylinders clean?

Is it well oiled and lubricated?

Is the electrical equipment all right?

Have you a supply of lamps?

Is your tool-kit all there?

Is the body bright and new, or does it need rejuvenating?

Ordinarily we motorists let all these questions go unanswered until we take the car out in the spring, and then we get the answers all in a lump—and it is some lump. Then we want a lot of things done all at once, and because the shop is so busy we don't get the prompt service that pleases us.

Wherefore, it is our suggestion—if we may make it—that you leave the car with us for a couple of days and ask us to tell you if anything needs to be done to it. We have plenty of time this week to make a careful inspection—at no cost. Later we shall have to charge for inspections.

Drive in, write or phone James 1923.

Yours for pleasant spring touring,
BURT MOTOR CO.

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SPRING IS COMING! ARE YOU READY?

IT is easy not to think of a job until it is time to begin. It is easy to pay little attention to spring business until the big rush begins. But the men who are going to make money this spring and summer are the men who are getting ready NOW.

Are you a NOW-man or a do-it-later?

Getting ready doesn't mean sweeping off the front sidewalk and then sitting down in the office and watching the weather reports. It means more than moving out the stove and cleaning out the coal bin. It means doing certain SPECIFIC THINGS.

Right now you have more time than you will have later. Don't ever kid yourself with the "haven't time" excuse. The men who "haven't time" are not operating efficiently. They have a stripped gear somewhere in the works. If the gear is YOU you can't get fixed too soon. Meantime, while you HAVE TIME,

Do These Things

1—See how many car sales you can close in the next two weeks.

2—See how many accessories you can sell in the next two weeks.

3—See how your stock of Winter Accessories is going. Clean it out NOW. They will be a dead loss later.

4—Check up your repair shop and see if it has made money and is making money now. If not, get after it.

5—Go over your vulcanizing business and see whether you are getting as much as you ought to have.

6—Count your car sales for the last three months and compare it with the schedule on your car contract. Even things up.

7—Look over all the windows in your building. If any need repairing, fix them NOW.

8—Investigate your car and accessory display facilities. If your windows need rebuilding, do it NOW.

9—If your salesroom isn't tip-top, make it so. If you have NO salesroom, build one NOW. Ask Motor World for plans. Give us the dimensions of your building and a rough sketch of the layout for our guidance. No dealer should be without a salesroom.

10—Investigate your prospect file. Is it up to date? Have you a GOOD file and a good filing cabinet? If not, get up-to-date on this. If your file is full of dead wood, chuck it out and start over.

11—Have you a good system for handling your prospects? If not, work one out NOW.

12—Find out how sales of your car compared with sales of competing cars in your territory last season. If you aren't leading shake things up and find out WHY. Do it NOW.

13—If you have no office girl, get one. Get one that can write letters and keep books, unless your business is big enough to warrant more than one girl. Don't leave your office neglected. Make sure there is always some one there to handle business. Hire the girl NOW and get started. Let her become familiar with the work.

14—Look over your road signs. Put them in good condition. Poor road signs indicate a poor garage.

15—Consider advertising. Set aside a certain sum, determine the length of time it should last and divide it into so many ads of a certain size. Ask your factory advertising manager to help you lay out a campaign.

16—Go over the whole building for appearance. Repaint wherever necessary. Repair everywhere. Compare it with other buildings in town. Don't let any one have anything on you for looks. Do it NOW.

17—Check over your list of employees. Make sure all are efficient. Make sure you have enough and not too many for the spring trade.

18—Plan to get transient business in your garage. Put up road signs, get in touch with hotels and arrange that they recommend you. Get your curb equipment right. Arrange for quick curb service. Make SURE of this.

19—Make sure you have an accounting system that tells you what you ought to know about your business. It should tell the overhead, profit, costs and a lot of things. You cannot run a business efficiently without such a system. If you have none ask about the Motor World Simplified System of Accounting.

20—Have an organization meeting—several of them. Impress every man with the importance of being on his toes, working cleanly and efficiently, well dressed, neat in appearance, looking after the interest of your business every minute and striving every day to make himself worth more money to you and to himself.

Spring Is Coming; Are You Ready?

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Accounting and Business System

By T. W. Snead

Service on Cars

Editor System Department: In giving service on cars we sell, we find job ticket No. 373 has 13 3/32 spring cotters, 2 cents; 6 qts. oil at 20 cents; grease, 50 cents; one 16736 piston, $1.85; 13¾ hours labor at 30 cents (cost). How would you enter this in system? Oil and grease to be paid by owner. Labor, etc., excepting piston, which was defective, by us as service.—Yankton Auto Supply Co., Yankton, S. D.

The total charge for this job amounts approximately to $8.21, of which $1.20 is a charge for oil. You would treat this charge just as you would a charge to a customer with the exception that it would be charged, not under Customer's Account, except $1.20, but under the All Other Accounts column on the debit side to an account called Free Service—Expense. Any charge to this expense account should of course be made at cost without any added profit and the credit entry, which is the income account, is to Income Repair department.

Repairshop Jobs

Editor System Department: Please explain entries when accessories or repairs are taken from the stockroom to be used in the repairshop. We understand that parts and accessories are credited, but under what heading do you debit repair department?

If I understand it right, when you start to use this system you make a sheet of your assets and liabilities but make no entries in the book. It is filed away for references when the next sheet is made. Am I correct?—Lingle & Son, Irving, Ill.

Make out a sales ticket in a similar manner to the one that would be made for a customer's sale, but instead of charging it to a customer, charge the accessory to the repair department at what it cost you, without any added profit.

Then enter this sale or transfer to the repair department on your Form 1 as follows:

On the debit side of Form 1 under All Other Accounts this charge should be placed to repairshop—supplies, and on the credit side place it under the Income Account column for parts and accessories, but at cost without any profit.

You are right in assuming that you will not have to enter any of your Assets and Liability accounts in Forms 1 and 2 in order to start the system. These are made up first in order to get the balance sheet of your business and generally and most conveniently are made on the first of the month. If you have the System Pamphlet illustrating and describing every entry you will see this clearly by referring to page 30 and working out Table No. 2 at the top of this page, which shows a statement of your Assets and Liabilities in column No. 3, "What we started with Jan. 1."

The result of what happened in January are the totals from Forms 1 and 2, and at the end of the month are listed in the third column and the difference between the Debits and Credit is carried forward to the second column and then added to what we started with on Jan. 1, which will give us a statement of our business at the end of the month, as shown by the fourth column. Of course, you have to find your income and your net profit by working out Table No. 1, which you will see illustrated on page 28.

Striking a Balance

Editor System Department: At the end of each month do you carry the totals of the previous month to the top of columns beginning the following month, and so continue with such time as books are closed, and at closing time the total of business done. If not, how do you carry the cash columns so as to strike a balance of cash at any time? The balance of cash should be carried along each month at least to insure quick and easy method to strike a balance at any time. What are your intended or customary methods?—W. H. Heald, Sandwich, Mass.

If you will refer to the supplement of the two big sheets which illustrate Forms 1 and 2 you will notice that at the end of each month the various accounts as shown by the columns are brought down to a total and made to balance at the bottom of each sheet.

The result of the month's business, as shown by these totals, is then carried to the debit and credit side of sheet which you carry in the back of your binder for each one of these accounts, such as Cash, Stock on Hand, Amount Due from Customers, and so forth, and by referring to page 30 of the pamphlet and following Table No. 2 through very carefully this will probably be better explained to you than I can do by letter.

In order to get a quick reference to see your cash in bank we suggest that you do as a great many garagemen and dealers are doing, and that is to carry the cash on hand and cash paid out on the blank space just to the right of the explanation column on the debit side of Form 1. In other words, your total cash on hand, plus your cash received, is shown here with the cash paid out deducted, which will give you at all times your cash in bank. You understand, of course, that there are no columns provided for this, and that it is simply shown here as a memorandum, which is all you need.

Entering Charges

Editor System Department: Please explain the following to me:

1. A stock of tires comes in from Goodyear T. & R. Co. amounting to $500. We have this charged to our account. How and where do we enter this transaction?

2. The gasoline man fills our tank with 300 gal. gasoline. Gasoline man charges my account. Explain my entry.

3. A slip is handed in with 5 hours' labor by a mechanic. Those five hours are taken up in fixing tools, etc., in workshop by mechanic. Explain my entry.

4. Thirty days after date I pay transaction No. 1. Explain entry and where. —Preston J. Wyble, Haas Garage, Opelousas, La.

1. And after you have checked your invoice to see that proper delivery has been made, etc., you would make an entry on Form 2 as follows: On the debit side you would charge under Stock Account, an account called Tire stock $500, and on the credit side of Form 2 under All Other Accounts column you would credit the Goodyear Tire & Rubber Co. $500. Opposite the name Goodyear Tire & Rubber Co. you would write Accounts Payable, and we assume that you carry your various accounts payable in the back of your ledger as you do your customers accounts receivable. This $500 then would be transferred to the credit side to the Goodyear Tire & Rubber Co. sheet in the rear of your binder.

2. The entry would be the same as above except that you would charge under your stock account on the debit side of Form 2 an account called Gasoline Stock and under All Other Accounts on the credit side you would credit the company that sold you the gasoline on credit.

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3. A slip is handed in by a mechanic from the repair department covering 5 hours of labor fixing up tools and so forth in that department. This ticket would be entered on Form 1 in just the same manner that you would make a sale of a repair to a customer. In other words, you would make a charge to somebody or some department, and the credit would go under Income-Repair department, but instead of charging this to a customer you would place the charge under the All Other Accounts column on the debit side of Form 1, and instead of charging a customer it would be charged to repair department—Upkeep Expense. The credit would go under the Income Account and you would note the sales ticket number. The only difference in this entry is that no profit should be added to the cost of the 5 hours labor, but it would be charged at exactly the cost of the mechanic's time. This expense on Form 1 under all other accounts to the upkeep expense in this department would, of course, be added to the expense which you will find on Form 2. At the end of the month under Repair Department, in order to get the total expense of your department.

4. Thirty days after date you pay transaction explained in question No. 1, that is, you pay your bill to the Goodyear Tire & Rubber Co. amounting to $500. The entry would be as follows: On the credit side of Form 2 you would enter the $500. In All Cash Paid column, noting your check number, and under All Other Accounts on the debit side you would charge this to account payable Goodyear Tire & Rubber Co. This debit or charge to the account payable will offset the credit that you made 30 days ago to the same concern, and this debit should be transferred to the Goodyear sheet in the back of the binder, which debit will offset the credit that you already find there.

Don't Enter Inventory

Editor System Department: We purchased your Motor World Simplified System of Accounting, and wish to have a few questions answered before we start.

We have taken complete inventory stock, machinery, fixtures, etc. Will these be entered in new system, and how?

Also, do we enter cash on hand, or do we keep separate cash account?—Sabina Motor Car Co., Sabina, Ohio.

We would suggest that you turn to pages 29, 30 and 31 of the System Pamphlet illustrating and describing the complete system. By reading these two or three pages carefully you can get a better idea of how to start the system than we could tell you through a letter.

It is not necessary to enter any Assets or Liabilities account on Forms 1, 2 or 3 to begin the system. All you need do is to take inventory of your stock, make sure of your Cash Balance and your Notes Payable and Accounts Payable and all other Assets and Liabilities and make up a trial balance similar to the one shown at the top of page 30.

After this has been made to balance you then begin to operate your system by recording all of your Income or Sales and all of your Expenses and Cash Paid Out on Forms 1 and 2.

The results of the month's operations are found on these forms, are then added or subtracted to the Assets and Liabilities which which you started at the first of the month, the result being a statement of your business at the end of the month in which you are working.

First Thing To Do

Editor System Department: What is the first thing to do? I take it that you should invoice and put the total of the Inventory in column Y, under stock accounts, then take all bills payable on the stock and put same in the same line (Y) under All Other Accounts on the credit side of form 2. Should the amounts be put down at the wholesale price?

When we receive a bill of goods should we increase stock accounts the amount of the invoice, and increase bills payable at the same time, under all other accounts, and then when we pay this bill at the first of the month, should we decrease bills payable under all cash paid?

We do livery work; when we take gasoline out of the tank to fill up cars with, what sort of an entry do we make? —Buffalo Motor Co., Buffalo, Okla.

It is not necessary to enter any of your asset or liability accounts on Form 1, 2 or 3 in order to start the system.

It would be wise for you to read from page 25 to 31 of the system pamphlet, which you should have received with the system. These pages show how to draw up a trial balance of the business at the beginning of the month.

In other words, you arrive at your correct Cash, and your Bills Payable, your Notes Payable and all other Assets and Liabilities. The excess of your Assets over Liabilities is your Profit and Loss, or your Surplus as of that date.

After this has been carefully compiled you then begin to operate the system by recording all of your Sales or Income on Form 1 and all of your Cash Paid Out and your Expenses on Form 2.

The results of the month's operation as shown on these two forms, are then added to or subtracted from your Assets and Liabilities, which you started with at the first of the month. The result is a statement of your business.

Your Inventory of stock or parts and accessories on hand should be taken at cost, and as new stock is received, your Inventory Account should be debited on Form 2 under Stock Account on the debit side and under All Other Accounts on the Credit side; Accounts Payable should be credited at the cost price.

When this bill is paid your check would be entered on the Credit side of Form 2 and on the Debit side you would debit accounts payable, reducing your Accounts Payable by the same amount that you increase this amount when the the goods were received, providing of course, that you paid the bill in full.

In your livery business when you use gasolene to fill the cars, you should keep this exactly as you do a sale of gasoline to a customer, and a charge slip should be made out charging the livery business with the gasoline used. The one difference in this sale is that in charging the livery business, provided it is part of your organization, the charge should be made at cost. The entry should be treated exactly as a sale to a customer, on Form 1.

Wholesale Sales

Editor Motor World: We are adopting your system of simplified accounting, and in coming to the proposition of entering sale made to our dealers when the cars are sold at a wholesale figure, we are in doubt as to whether the entry in the car sale column should show the full list price of the car plus freight, and then on the debit side show the amount of cash received, and under all other accounts make an entry of amount equal to the discount with the explanation that it is sales expense dealers' discount. Or whether we should enter just the cash received on the debit side and the wholesale price of the car on the credit side.—Darling & Kidder Co., Portland, Me.

The exact amount for which the car was sold should be entered in the Car Sales Department on the credit side of the Income and either cash or notes or whatever was received for the car entered on the debit side.

Your dealer's discount is not an expense but simply a reduction in the list price of the car, and in this connection we would suggest that if you desire to keep your wholesale and retail business separate, you use one column for wholesale cars sold and another column for retail cars sold, using some column under Income account for which you probably have no use at the present time.

QUESTIONS

Ask all you like.

Address

SYSTEM EDITOR

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REPAIRSHOP SHORT-CUTS

From the MOTOR WORLD Road Man

(No. 1051) PISTON RING COMPRESSOR

The insertion of piston and ring assemblies in the cylinder is facilitated by aid of the piston ring compressor illustrated. This compressor is made of sheet metal, about 2 in. wide and long enough to reach around the piston and lap ½ in. The ends are then soldered together, forming a cylinder with one end somewhat larger than the other. This is slipped over the piston, compressing the rings and permitting the piston to be readily inserted. This compressor is found to be especially advantageous in replacing piston from the crankcase.—Charles Field, Field & Herman Garage, Wymore, Neb.

(No. 1052) DRY DISK CLUTCH OFFSET

The action of dry disk clutches may be improved by offsetting the surface of every other disk, at regular intervals. A tool for offsetting these disks is shown, consisting of a tool steel base and a blunt center punch carried in an overhanging arm. To use, the disk to be offset is placed beneath the punch and the end of the punch given a very light blow with a hammer. As the spring returns the punch to the upper position each time, and as the punch is always in the position for the next blow, one man can readily do the work.—W. L. Toffard. The Winton Co., Philadelphia.

(NO. 1053) ELECTRIC TORCH LIGHTER

The torch is automatically lighted by an electric spark by simply putting it in position. The shank of the torch closes the primary circuit and then it is lighted by a spark which appears at a gap in the secondary circuit. A Ford spark coil unit and three dry cells complete the equipment.—J. V. Haney, Wells Garage Co., St. Catherines, Ontario.

(NO. 1054) LIFTING HOOKS FOR FORD

Each hook is placed on the fender iron below the nut on the end of the lamp bracket. The ring is placed in the hook on the chain fall and the car raised.—Ford Times.

(No. 1055) LOCATING ENGINE NOISES

An ordinary physicians' stethoscope may be effectively used in locating engine noises. To the trained mechanic it will be found to be too strong, but for the amateur who is not used to studying motor noises the sensitiveness of this type of instrument is well adapted. —W. L. Toffard, The Winton Co., Philadelphia.

(NO. 1056) LIFTING HOOKS FOR FORD

With this device the rear end of the car may be held securely while removing or repairing the rear axle assembly or spring. To attach, first place the clamps on the frame and then bring the ends of the bars together, one bar resting in the safety clevis on the other bar. The links are then placed in the hook on the chain fall and the car raised — Ford Times.

(No. 1057) TOOL CHECKING SYSTEM

By the use of this system, the location of any of the tool room tools may be determined at a glance. Each of the tools has a particular bin and the name of the tool and the number of the bin is marked on a chart hanging at the side of the shelves, as illustrated. Six numbered brass checks are given to each workman, the number corresponding to the workman's number on the time cards. When a tool is taken out, a check is given in return, and hung on a nail in the square marked off for the tool. Then if anyone else wants the tool, the workman who has it may be quickly found, or the workman returning the tool can tell in which bin it belongs.—Williams McIllvrid, Colt-Stratton (Dodge Brothers), New York.

(No. 1058) ADJUSTABLE VALVE TOOL

This valve tool operates on the pliers principle, but possesses the feature of being adjustable. It is in three parts, one comprising the lower handle carrying the adjustable jaw and pivoted to the upper handle and jaw in the manner shown. A loop at the ends of the handles permits the jaws to be locked in the open position, thus leaving the hands free to insert or remove the locking device on the valve stem. The jaws of the tool should be made as thin as is consistent with strength, and case hardened to prevent injury.—W. L. Toffard, The Winton Co., Philadelphia.

(No. 1059) AIR HOSE REEL

One length of air hose may be used for supplying air to several cars in the garage, if mounted on a common hose reel and carried to the tap nearest the car for which the air is desired. By attaching a hose to the reel by its middle portion, both ends of the hose may be wound at once. The advantage of this system is in the saving of the amount of hose, and the removal of the necessity of taking a car from its stall to the hose as when a single hose and tap are used. With this system, it is, however, essential that the air be piped so that the hose may be attached at a point that will permit several cars to be served.—W. L. Toffard, The Winton Co., Philadelphia.

(No. 1060) COUNTERBALANCE FOR TELEPHONE

The telephone in a tool room is often injured, due to the nature of the work done in its vicinity. Such injury may be prevented by counterbalancing the phone, as illustrated, so that it is raised out of the way when not in use. The counterbalance should be made somewhat lighter than the phone, so that it will not raise the phone when in use, but not so light but that a slight touch will raise it.—Charles Sweigert, Haynes Service Station, New York.

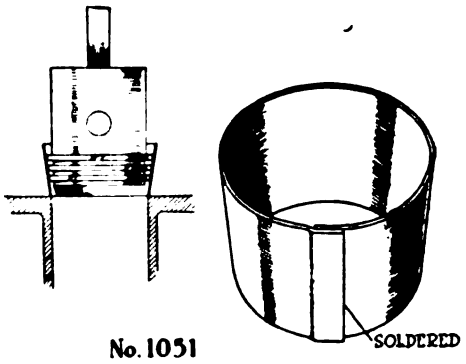
This Week

NEARLY a score of garagemen and repairmen in various cities sent Repairshop Short-Cuts for this department.

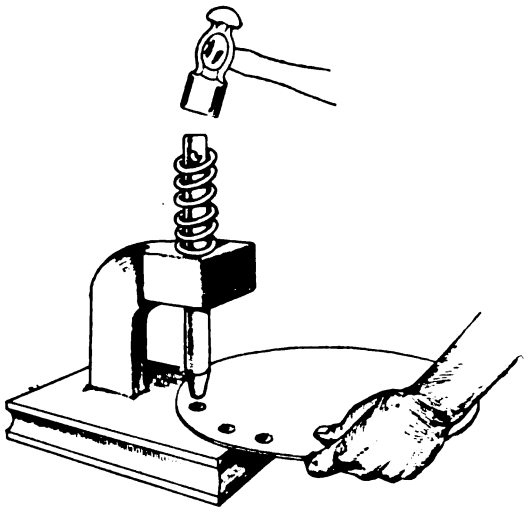
What have you done that we can illustrate on this page? Perhaps it is better than any of these.

Let us see it.

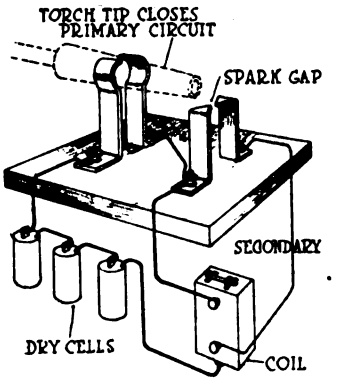
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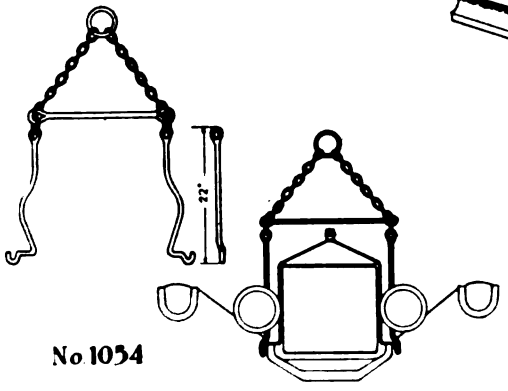
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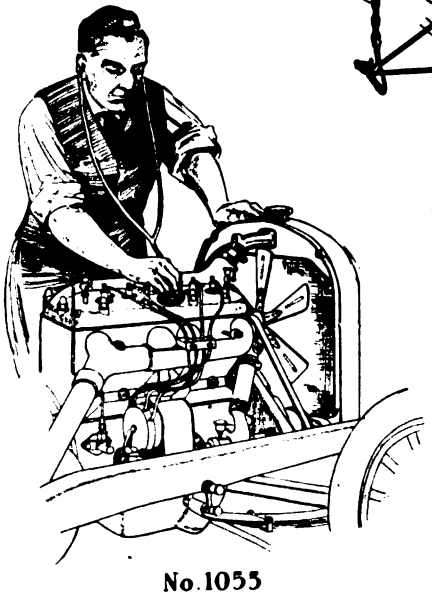
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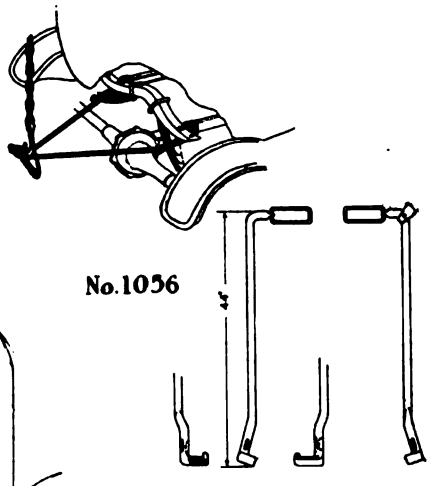
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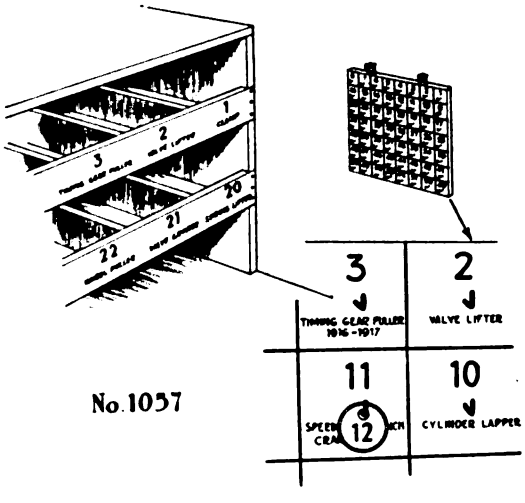
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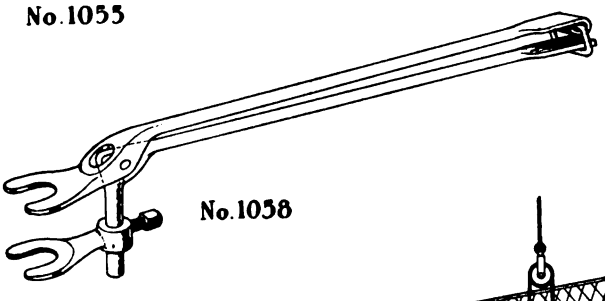
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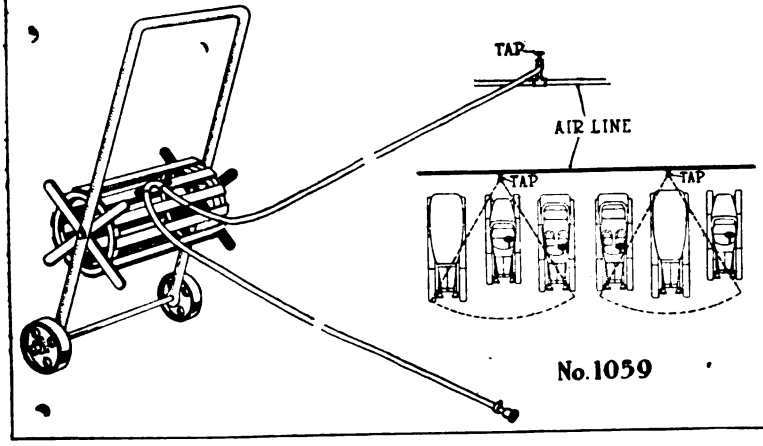
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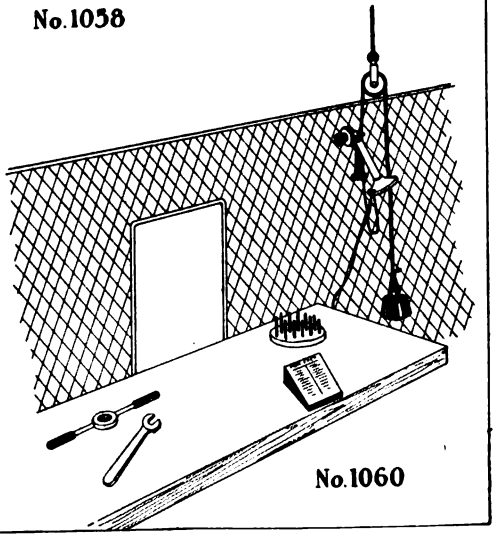
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No. 1058



No. 1059



No. 1060

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The twenty-fourth in a series showing

Dealers Who Have Made Good

J. M. LINSCOTT enjoys the unique reputation of never having worked a day for any one else. He has been his own boss since he started at the age of 18 selling bicycles.

He was born in Maine 55 years ago. After he had completed his education the bicycle business began to loom up, and he bought a number of machines and sold them to friends.

In 1890 he moved to Boston, where he continued selling bicycles and supplies. He took the agency for Reo cars in 1905, and the first Reo ever shipped into New England went to him, and he now has it in his salesrooms.

Linscott has represented that car ever since, and it has grown to be one of the big sellers in his territory, so that his business now represents $1,500,000 yearly from that agency, while the Linscott Supply Co., which he also controls, does a business of $500,000 yearly.

There is nothing spectacular about him. In fact, you never see him about very much at the feasts of the motor associations, but it is not due to any diffidence on his part. When asked what he attributed his success to he said: "First, one should be honest with himself. Then one should be honest with the other fellow and assume that the person is honest with you. Give customers honest service. By that I mean real service with an honest endeavor to serve them to the best of your ability. That policy has brought me success."

"What would you say if you were getting advertisements for your paper, and you had several big ones, but they were not acceptable because there was no room?" That was one of the questions Linscott asked the MOTOR WORLD man when he went to get a few facts about why the Reo was so popular in New England.

Its import was apparent when he said: "Last season there were 225 more people who wanted Reos here than the factory would let me have cars for. But I sold 900."



J. M. Linscott

Boston

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ANGLES OF THE LAW



By George F. Kaiser

When To Accept Checks Carrying Notations

RECENTLY I was asked by a perplexed dealer if it was safe for him to deposit a check which he had received from one of his customers which had written on it the words "in full settlement of all accounts to date."

The Appellate Term of the Supreme Court of New York State has just handed down a very interesting decision on this point in which it explains in which cases it is all right to deposit such a check in the bank and in which cases it is wrong to do so.

Suit had been started by a dealer to recover the amount which he claimed was due him for some silk which he had sold.

The customer claimed that the dealer had no right to sue him because the dealer had accepted a check on which the customer had written "in full payment of all accounts to date" and put it through his bank for collection, and that therefore the transaction was closed.

The Court decided in favor of the customer holding that as the dealer had accepted the check he was bound by his acceptance and could not sue the customer for any further amount because of the notation on the check.

The Court, in reaching its decision, explained when the acceptance of a check with such an endorsement will prevent a dealer from suing for the balance and when it will not, saying that there is no doubt that the debtor is bound to pay a conceded debt and the payment of such a debt or a smaller amount will not deprive a dealer of his right to sue for a balance which he thinks is due to him.

Thus, for instance, if a dealer claimed that a customer owed him $100 and the customer admitted that he owed $50 and sent a check to the dealer for $50 with the endorsement on it "in full settlement," the dealer could cash it and still sue for the additional $50 which he claimed was due from the customer.

If, on the other hand, the dealer claimed that there was $100 due him and the customer contended that he owed less because the goods were not as represented, or were defective, or were not according to the contract in some other way, the dealer would be bound if he accepted and cashed a $50 check with such an endorsement, and could not get judgment for the rest of his claim by bringing suit.

According to this decision the dealer is safe in cashing a customer's check if it is only a part payment on a larger amount, but if there is any dispute as to the goods sold, or services rendered by the dealer, he will give up the claim for any additional amount he may have if he cashes a check containing the "full settlement" clause. Frank vs. Vogt, 162 N. Y. S., 369.

IMPORTANT

HERE are two matters of the greatest importance to dealer and garageman.

Are there any other subjects like these that you would like Mr. Kaiser to explain?

If so, write to him.

"Running Condition"

The meaning of "running condition" as regards a used car is given in a recent case which reached the Supreme Court of Errors of Connecticut.

Suit was brought to recover $150, which had been paid to a dealer as a part of the purchase price of a used car.

The buyer claimed that although the dealer agreed to put the car in first-class condition he had failed to do so, although he had been given a reasonable time.

The dealer denied that he had agreed to put the car in first-class condition, but admitted that he had promised to put it in "running condition."

As to the meaning of "running condition" the Court said:

"Running condition, gentlemen, is to be construed in its ordinary meaning as it is understood by the common speech of men. It does not mean running for a few minutes or running for a few miles, but is what is commonly understood by persons when the term 'running order' or 'running condition' is used.

"'Running order' means that it will run under ordinary conditions, and continue to run under such conditions for a reasonable time, except for causes thereafter arising, due to no fault of the seller or for causes due to the fault or neglect of the purchaser."

As the customer had rescinded the contract and returned the car he was allowed judgment for the money he had paid. Lane vs. McLay, 99 Atlantic, 498.

Can't Hold Dealer on Warranty

Where a manufacturer of automobiles gives a warranty and the dealer's order blanks provide that he does not warrant the automobile but only agrees to assist the buyer in securing adjustments, the dealer will not be held on any warranties made by his employees.

Suit was brought on a promissory note which had been given as part payment of an automobile.

The dealer's contract provided: "All cars, tires and equipments sold by us are guaranteed by the makers, and we do not under any circumstances assume any further responsibility than to assist our customers to get the best adjusting possible under the terms of such guarantees."

The Court held that in view of the above even though one of the dealer's employees had given a verbal warranty, the dealer would not be bound by it and should have judgment on the promissory note. Crist vs. Turner, 161 N. Y. S., 856.

No Title to Property

The Supreme Judicial Court of Massachusetts has decided in a recent case that the title to property does not pass to a person holding a mortgage on a business if the property is not mentioned in the mortgage, or if there is no provision in the mortgage that property, which the person giving the mortgage acquires after its execution, is to be covered. Hallfors vs. Gove, 114 Northeastern, page 314.

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Do It This Way — QUERIES ANSWERED

Two New Carbon Removers

Caustic Soda Loosens Deposit

Editor Motor World: When taking down my car I put the cylinders into a solution of caustic soda to remove the old paint, and occasionally found that the solution acts as an excellent carbon remover. It scales the carbon right off and leaves the surface cleaner than after scraping.

I now want to find out whether it would harm the motor to inject it into the cylinders and let it stand for a day or two, then start up the motor to blow the carbon out through the exhaust. If some of it went by the pistons, would it have any effect on the lubrication? Does it attack iron?—A. F. W. Haeussler, San Juan, Porto Rico.

Your suggestion regarding removal of carbon is very interesting and it should cause no difficulty provided care is taken, but otherwise great havoc may result.

Caustic soda, caustic potash or sodium or potassium hydroxide will not injure iron if left in contact with it for only a day or so, but all these solutions quickly dissolve aluminum and eat bronze and brass, consequently it is imperative that none of the solution you use come in contact with these substances.

In other words, it is perfectly safe to clean the carbon out by this method, provided you have the cylinders off, but it is doubtful if you will find it safe with the motor assembled, unless it happens that your pistons and crankcase are iron or steel.

A particularly violent action might be set up if the pistons are aluminum, the aluminum and cast iron forming a battery, and rapid corrosion would result.

It is dangerous to use this solution when the crankcase is aluminum inasmuch as some of the liquid might leak down and attack it. This applies to motors with crankcase bottoms of aluminum. If the upper half of the crankcase is aluminum and the bottom is of steel, there is small cause for worry.

Any of the solutions we have mentioned will not attack lubricating oil or any mineral oil, but vegetable oils will be turned into soap.

Steam for Cleaning Cylinders

Editor Motor World: Kindly give me your opinion as to the use of a device which drives carbon out of a cylinder by shooting live steam into it.—J. E. Jones, 1025 E. High Street, Hamilton, O.

We have never heard of using live steam for removing carbon, but would not be surprised if your suggestion is a good one. It seems quite possible that steam issuing from a nozzle at a pressure of 100 to 200 lbs. would have sufficient force to gradually wear away the carbon, and that this action would be facilitated by the intense heat. If you try this scheme we should be very pleased to know what success you have with it.

If, on the other hand, you merely intend to supply the combustion chamber with some moisture in the form of steam and depend on the moisture itself for removing the carbon you will have no success, but we do not believe that this is what you mean.

10 Shortcuts for Replacing Pistons and Rings

Editor Motor World: Will you please give me a good method of replacing piston rings and pistons? I have had several jobs lately and the customers have been kicking at the cost of labor, claiming my method is too slow and costly. Most of the jobs have been on Knight and Ford motors. — Reader, Kingston, Pa.

There are many methods of replacing piston rings, and we shall describe all we have published in our Repairshop Shortcut Department.

Fig. 10 shows a tool that may be used for compressing piston rings on all motors of the detachable head type. The four legs of the tool are brought down to the proper adjustment by screwing down on the nut at the top of the adjusting cone, and the arms are held in close contact with the cone by four coil springs.

When the piston is in place, in the tool, the rings are compressed by pushing it down into the cylinder, there being four blocks, pivoted on the four arms for this purpose.

It is not necessary to loosen the adjustment each time a new piston is put in; all that is required is to rotate one of the blocks, as shown by the dotted line. In order that this block may swing back into place, the tool must be of sufficient depth to allow the skirt of the piston to clear it.

All parts must be of substantial section, as rigidity is important. There must be no spring to any of the parts, or there will be difficulty in using the tool.

To Fit 90 Per Cent of Motors

A series of rings, Fig. 4, will be found a great convenience in replacing piston rings. The ring is enlarged at one end so that it will take the rings easily, and the other end is the same size as the cylinder. A section of cast iron and one of steel are shown. The ring is cut away so that it may be slipped over the shank of the connecting rod. A dozen of the standard sizes of these rings will take care of 90 per cent of the 1916 models. Herewith are the figures:

Phone Call

Date

Mr.

You were called at

By Mr.

of

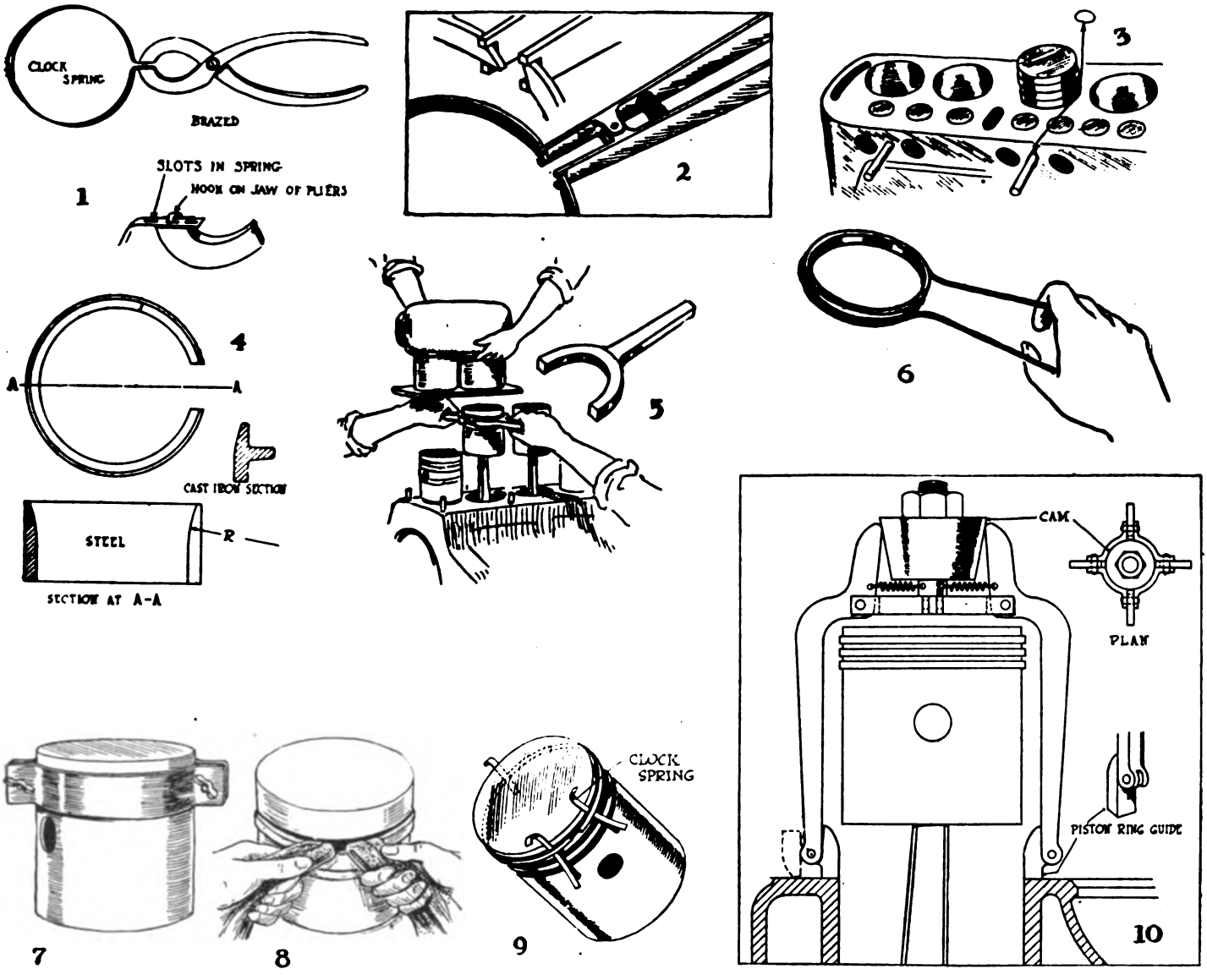
Phone No.

His message was

Operator

Usually when a man phones you and you are out, the person who answers the call forgets to obtain all the essential facts. This pad eliminates this possibility. Furthermore, if the call is recorded on a scrap of paper it may be accidentally lost, but this is not likely to happen with the printed phone slip.

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Ten methods of replacing pistons and removing and replacing piston rings

Bore, Inches.	Number of Makers	Per Cent
2¾	4	2.2
2⅞	6	3.3
3	23	12.6
3⅛	11	6.0
3¼	18	9.9
3⅜	34	18.7
3⅝	4	2.2
3¾	23	12.6
3⅞	10	5.5
4	14	7.7
4⅛	3	1.7
4¼	7	3.8
Others	25	13.8
Total	182	100.0

Piston rings may be readily removed, Fig. 8, by the use of emery cloth or any other strong fabric; as shown in the drawing, two pieces of the cloth are used, one being slipped under the edge of each ring and then they are folded over and used to expand the ring just enough so that it may be removed. The ring may be replaced the same way.

Fig. 3 shows a method of compressing the rings and inserting the pistons and the cylinder, provided the cylinder is the detachable head design. A flexible wire loop is used as shown. The wire is fastened to the cylinders at one end, the other end is pulled tight, thus compressing the rings.

To facilitate the replacing of the rings of a piston the plan shown in Fig. 9 may be used. Take three pieces of an old alarm clock spring about 5 in. long each, then bend one end in the form of a hook, place the springs around the piston, as indicated, with the hooks at the top. Then the rings are put on one at a time. To remove a ring first insert one spring where the ring is parted, then a second one as shown. Finally place the third spring in position at the back of the piston and then the ring may be pulled off.

Fig. 1 shows two ways of making a tool for compressing the piston ring so the piston may be inserted on the cylinder. The upper tool has a clock spring brazed to the jaws of a plier and is mainly used in compressing the rings of Fords where the pistons are slipped into the head. The lower tool is brazed on one side and the other end of the steel band is held by a hook. There are several slot cuts in the band so that it may be adjusted.

Fig. 6 shows how a good stout piece of springy wire may be used for compressing piston rings when the piston is being inserted into the cylinder.

Fig. 5 shows another method, but two men are required. The rings are compressed by semi-circular members with suitable handles, one being held in each hand.

Fig. 2 shows a simple tool for expanding piston rings so that they may be removed from the piston. The same tool may be used for replacing the rings.

Fig. 7 shows a piston ring clamp, It may be used on a single size of piston, and is just clamped loose enough so that it may be slipped off as the piston is slid into the cylinder.

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Editorial Observation

A Dozen Heads

WHAT a world of good the dealer dinners at the great National shows have done. From mere social events they have become business forums.

Dealers have gone home from them charged with enthusiasm, filled up with new ideas and with a stronger feeling than ever of their worth to the community in which they do business—of their duty to that community.

And if these dinners are of such value, why cannot local dealers have regular get-together meetings of their sub-dealers? Why cannot just as much good come from these gatherings?

They can hold them and just as much good will come from them.

Take the case of Lostro, whose story is told on pages 5, 6 and 7 of this issue. Lostro STARTED in business with a business meeting. He made the whole town attend that meeting. Ever since then he has held regular meetings of his dealers. He feeds them ideas at these meetings. He teaches them how to sell cars. And in consequence, they sell them.

H. A. Amerman, secretary of the Automobile Trade Association of Champaign County, Illinois, is another who realizes the benefit that comes from frequent gatherings of the kind. At regular intervals he gets all his employees together. They thresh out their problems. Everyone has a voice at the meetings. Everyone has an idea.

But the most important advantage of all is that every employee becomes thoroughly familiar with EVERY ANGLE OF THE BUSINESS. The bookkeeper can estimate on repair jobs; the mechanic can tell how and when bills go out; the service manager can help close a sale.

This is the kind of co-operation that counts.

Dealer dinners are good. Dealer meetings are good. Family gatherings of employer and employees are good.

Let's get together a little more. A dozen heads are better than the proverbial two.

The Income Tax

TO most persons the Federal Income Tax law is a much mixed matter. Few dealers and garagemen know whether they are included under its terms or not.

But, after all, it is not such a difficult thing to understand. Any one enjoying an income in excess of $3,000 must pay a tax on everything over that amount, unless married, when the tax is on everything over $4,000.

The amount of the tax varies with the amount of the income when this exceeds $20,000 a year. For amounts under $20,000 the tax is 2 per cent. Over this amount the tax gets steadily bigger, until it reaches 13 per cent on incomes of over $2,000,000 a year.

The government is exceptionally inquisitive about incomes. It asks dozens and dozens of questions, all of which must be answered in just the right way.

All of these things combine to make the law one which is not very easily understood by the man in the street.

Stripped of all its legal language and put into simple words, however, there is not much more to it than is outlined here. But for those who want to know more about it, MOTOR WORLD has prepared an article which tells the whole story in simple understandable language. Watch for it.

The Man Whose Legs Were Wood—*Read Reilly on Pages 16 and 17*

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Selling Motor Cars In Sweden

There, Push and Dash Don't Go and the Commission Salesman Is a Scarce Article, Says Hans Osterman

HANS OSTERMAN, managing director of the company of the same name—Aktie Bolaget Hans Osterman—Stockholm, Sweden, is in America to see the motor car shows and to study the market. His company is an established and leading concern in motor cars, tires and accessories. Up till now he has handled only European cars, but he now intends taking up distributing agencies for Sweden for one low-priced car and one high-priced car. He finds America and her motor trade highly interesting.

"Though I knew," Osterman says, "that the American motor trade was enormous, I could not imagine that it had taken such tremendous dimensions. In nearly every automobile journal the factories announce extensions of their works and often doubling of their output.

"The same is the case with the tire factories. New, big factories for motor cars are starting besides. Consequently, it is a rather difficult task to pick out the cars especially suitable for Sweden.

Freight Is High

"Until the outbreak of the war European cars were sold in majority in Sweden. The high cost of freight for cars from America to Sweden is an obstacle, and the freight difference is supposed to be better used in buying a more expensive but better qualified European car.

"Sweden is very big in comparison to its number of inhabitants. Some towns in the North and many other places have no railroads. The motor cars are consequently keeping up the traffic in and between such places and are of the greatest importance. Automobile sales have certainly a great future in Sweden and the cheap American cars will be very much sold in Sweden after the war, especially when the freights get normal again. But the agencies must be given to real trade firms. A car even of high quality will have difficulties to win the reputation it ought to have.

"The roads are not of the same good nature as here in the east of the United States. They are generally macadamized, with curves, and in winter in the North covered with deep snow.

"Sweden, the Land of the Midnight Sun, is yearly visited by thousands of tourists from all the world, many with their own motor cars, many hiring motor cars for long trips. Though they generally are accustomed to better roads, they are fascinated with the varied sceneries which the winding, hilly roads offer along lakes, mountains and rivers.

"Because of the beauty of the country sometimes foreign automobile clubs make big excursions through Sweden, most in Jaemtland and Dalarne. This was before the war. The last of these trips was the one made by about 50 members of the Russian Automobile Club, wherein the Grand Duke Cyril and the Grande Duchesse Victoria of Russia, together with other Russian dukes and notables, took part. A great many members from the Royal Swedish Automobile Club joined the excursion which went through the loveliest and most charming parts of the country.

"The sale of cars is not handled in exactly the same way as here. Where the firm has its own office and exhibition room, the salesmen are on salary, generally with a very small commission. The traveling salesman has a smaller salary and a bigger commission. The entire commission salesman does not exist very extensively in the motor car trade in Sweden. He would be too rushing and the prospect in Stockholm would simply dismiss the man entirely. The customer must be handled more diplomatically.

No Commission Salesmen

"Commission selling is popular with the best American salesmen because it makes it possible for them to cash in to the full on their ability and aggressiveness, but not so in Sweden. Too much aggressiveness doesn't go. The difficulty is always to get to know who is intending to buy. In a great many cases you get the prospect's name from the old buyers. The general sales plan is similar in its fundamentals to that in America, although the details differ. The big element of friendship and good will helps sell.

"The salesmen get from about 200 to 500 kroner a month. In the United States talk that is from $60 to $150 a month, but in its buying value it is equal to at least double. The living in hotels and restaurants in New York is, without exaggeration, double as expensive as in Europe."

Osterman has dealers all over Sweden just as American distributers handle their territories. Service is much the same, except that there is possibly less so-called "free service." His garage will shelter 54 cars, each in its private stall with lock and key.

One field of enterprise is in cabs. Many cabmen rent their cabs at so much a month instead of owning them. When the value of the cab is paid it belongs to the cabman. Cab fares are about one-third the New York rate despite the fact that Stockholm has 350,000 people; and the service, Oh! many, many times better!

In Stockholm ordering a cab would be about like this:

Osterman takes up telephone: "Cab stand."

Cab office: "Yes."

Osterman: "Cumberland Hotel."

Cab office: "Coming."

And in a few minutes—very few—the cab would be at the door. The reason is this: First, he says, the telephone service is much better. Then, the cab men are all in one association with a central office. This central office relays all calls to the stand nearest the caller and the cab gets on the job quickly.

Cabs Are Regulated

And all the cabs are regulated more or less by the city. A certain number of cabs must meet certain trains. For example, 50 cabs might be ordered to be at the station each day when the Twentieth Century arrives, and 10 for the Philadelphia-New York trains.

If a cab man were out on a shopping trip and it came time for him to report in a group to meet a certain train, the driver would explain the situation through showing his order, would take the passenger to the nearest cab stand, collect his fare and go to the railway station. The passenger would simply get into another cab and continue his trip.

Osterman is twice—1913-1914—winner of the Winter Cup, which must be won again before it is his. Since the beginning of the war no race has been arranged. The race is 1200 miles around Sweden in the dead of winter, and some times it is 26 below zero centigrade, which is 78.8 below by a Fahrenheit thermometer. The race is international and arranged by the Royal Swedish Club. English, German, French, Danish and Norwegian sportsmen come for these winter reliability races, which are supposed to be the hardest in the world. This opinion is confirmed by the foreign sportsmen, many of whom have been in all different kinds of races; as, for instance, W. L. Sorel, and Carl Joerns, the winner of the Grand Prix of France, 1912. Prizes to these reliability races are given from the English, French and German clubs.

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The RETAIL NEWS.

PACIFIC COAST

Grandview Auto Co., Grandview, Wash., has been incorporated by L. D. Geaney, R. W. Haskins and George L. Haskins. The company is incorporated for $5,000.

Auto Interurban Co., Spokane, has been incorporated by Herbert S. Hawley, Eva K. Hawley and Ethyline M. Boland. The company is incorporated for $10,000.

E. M. Mark, Seattle, Wash., for several years distributer of Oakland cars, will shortly form a corporation to handle the Harroun line, which he has recently secured. G. A. Mark will be president and manager of the new corporation.

Hotspark Ignition Co., Seattle, Wash., has opened at 703 East Pike Street under the management of R. M. Redpath.

W. S. Dulmage Motor Co., Tacoma, has opened a new salesroom and service station at 808-10 A Street for the display of the Chevrolet line.

Merchants Auto Body Co., Tacoma, has been formed by D. A. Arnold, J. L. Reese and J. F. Latham.

Cook & Gill Co., Portland, Ore., has opened a machine and repair shop at 409-11 Davis Street.

NORTHWEST

The United Motors Corp., Livingston, Mont., has been incorporated for $300,000 by R. R. Ege, Robt. I. McKay and E. B. Hubbard. The company will erect a steel and concrete building 100 x 140 and take over the Ehe Motor Co., having two established garages, handling the Buick and Ford agencies.

Olaf J. Dahle, Renville, Minn., has opened for business in the White garage.

N. A. Nelson and W. E. Franks, Canby, Minn., have bought out their partner, E. Richter, in the Canby Auto Co.

J. H. Zander, Brownton, Minn., bought the interest of his partner, W. W. Hill, in the Brownton garage.

Carlson & Douglas, Alden, Minn., have taken over the Wells garage, of which they bought the lease and stock.

Springen Bros., Mayville, N. D., will take over the garage of the Mayville Motor Co.

Owen-Nelson & McCenzie, Warroad, Minn., will erect a garage 60 x 120.

E. J. Pegg, Valley City, N. D., will build a two-story garage at Front Street and Fourth Avenue.

Roy Curley, Stillwater, Minn., has bought the Alfred Olstad interest in Motor Inn.

Schmitz Bros., Stewart, Minn., have moved into a new garage.

Yost & Halverson, Winifred, Mont., garage, have dissolved partnership.

H. E. Loranger and Tom Gray, Havre, Mont., will open a garage on First Street.

Curt Marcus, Darwin, Minn., will erect a large garage.

Merritt and Howard Bean, Oakes, N. D., bought the tire and accessory department of the Oakes garage from J. M. Olson.

G. A. Daily, Mandan, N. D., sold his business to the Western Sales Co., of Bismarck, N. D.

D. L. Harrington, Wimbledon, N. D., has bought the Wimbledon Motor Co. from Herman Etter.

H. Sommers, Almont, N. D., will open a garage in the F. E. McDougal shop. He is from Tower City, N. D.

E. R. Boutell, Inc., 343 N. Exchange Street, St. Paul, is now northwestern distributer for the King. Minneapolis headquarters are 1201 Hennepin Avenue.

The Boyce Automobile Co, Shenandoah, Ia., is a new concern which will sell Studebakers and Oaklands.

The Storm Lake Auto Clearing House, Storm Lake, Ia., has been sold by R. E. Welch to H. P. Witt.

W. A. Vernon, Carlisle, Ia., has bought out the Prince Garage Co., of that place.

Van Eagan Brothers, Kellogg, Ia., have bought the Craven & Gilreath garage.

A. V. Ulch, Elberon, Ia., has sold his garage to Frank Parizek.

Julius Paulson, West Union, Ia., has bought the John C. Holverson garage.

George H. Meyer, Allison, Ia., has sold his garage business to A. W. Ross of Ackley, Ia.

A. O. Harney, Henderson, Ia., has sold his garage business to the Red Oak Auto Co., Red Oak, Ia.

W. A Stark, Clarion, Ia., has bought a site for a business block to house a new auto and garage business.

Johnson, Lundell & Johnson, Fort Dodge, Ia., is a new concern which will handle Studebakers in five counties.

F. A. Kayser, Webster City, Ia., will build a new home this year for his Ford garage and service station.

W. F. Harms, Eldridge, Ia., has opened a new garage and will sell Studebakers.

Orrin Smith, Dysart, Ia., has bought ground for a new garage which he will open for business this spring.

The Cedar Falls Taxi Co., Cedar Falls, Ia., has been bought by W. E. Noble and A. S. Kingman. They will enlarge the garage and install a Willard service station.

Chris Hoegh, Brayton, Ia., has sold his garage to George A. Christensen.

The North Iowa Motor Sales Co, Mason City, Ia., will add two stories to its present two-story block and build a four-story addition, making a four-story block with 25,000 ft. of floor space.

R. J. Schierbrock, Neola, Ia., will build a new garage to accommodate his rapidly growing business.

The Lang Tractor Co., Minneapolis, has been organized at $1,250,000 and will make tractors. Incorporators are Lucius Frank, Richard Canning, B. B. Benedict.

Oscar Baumann, Yates, N. D., will build a garage.

Carl Lundeen, Annandale, Minn., has leased the Cofield garage to open March 1.

George Johnson, Edmore, N. D., will build a garage.

R. A. Berkner, Milbank, S. D., will make an addition to his garage.

Miller Bros., Lake Andes, S. D., have opened a new garage.

Fairmont Universal Garage & Mfg. Co., Fairmont, Minn., has bought the Porter Bros. garage on First Street.

SOUTH

The Willys-Overland Co. has opened a used-car department in Atlanta, Ga., at 236 Peachtree Street. Frank North is in charge.

The Blount Carriage & Buggy Co., Atlanta, Ga., will sell the Woods Dual Electric Cars at 46 East North Avenue.

The Reo Atlanta Co., Atlanta, Ga., distributers of Reo cars and trucks and H. A. L. and Ohio Electric cars, are in new quarters at 380 Peachtree Street.

The Anderson Motor Sales Co., Birmingham, Ala., has taken over the agency for Briscoe cars by purchase from P. J. Macalpine. The Anderson Co., of which J. A. Carr is president, will handle Mack trucks.

The D. W. Young Motor Car Co., Atlanta, Ga., has opened a salesroom and service station in Montgomery for Packard cars. I. Griffith of Birmingham will be in charge at Montgomery.

The Quigley Tire and Vulcanizing Co., Memphis, Tenn., has removed from 229 Monroe Avenue to larger quarters at Monroe Avenue and Marshall Street. When equipment is received the station will have five service cars.

The Federal Rubber Co., Atlanta, Ga., branch has been opened at 17 Houston Street. E. L. McCaffrey, formerly manager of the Philadelphia branch, is in charge The southeastern warehouse for the company will be in Atlanta.

SOUTHWEST

The Motor Truck Sales Co., St. Louis, has succeeded the Smith Form-a-Truck Co., of that city handling the line indicated in the latter name and the Signal trucks. A. H. Sullivan will continue as head of the company.

D. J. O'Keefe, formerly sales manager in Texas for the General Roofing Co., has become sales manager for the Harry Newman, Inc., of St. Louis.

E. T. Ferguson, St. Louis, and C. A. Cole, Peoria, Ill., have joined the sales force of the White Company in St. Louis.

R. G. Gregg, Little Rock, Ark., has become secretary of the newly incorporated Little Rock Battery Co.

John W. Hansard, St Louis, has joined the staff of the Supreme Motor Co. of that city.

Samuel L. Chorlines, St. Louis, recently with the United States Tire Co., has been made manager of the Independent Tire Co., that city.

The Locust Motor Sales Co., St. Louis, formerly Scripps-Booth dealer, has liquidated and the agency has been turned to the Supreme Motor Co. Allen K. Haines, president of the company, has been named sales manager for the Western Tire Brokerage Co. John H. McKinney, vice-president, has joined the force of the De Luxe Automobile Co. and Ben. L. Easton has joined the Tate-Gillham Motor Car Co. staff.

The Western Tire Brokerage Co., St. Louis, has moved from 306 North Leonard Avenue to 3133-35 Locust Street and has opened a twenty-four hour service station. The company sells tires at both wholesale and retail.

The Combination Automobile Lock Co., St. Louis, has opened offices in the Granite Building with Harry Balthaser, president, in charge. The locks are to prevent theft of automobiles.

The Brandle Motors Co., St. Louis, succeeds the Westcott Motor Sales Co. The change of name is a formality as no other change is contemplated. T. C. Brandle is manager.

The Kerosene Motor and Tractor Co., St. Louis, has been organized to sell the Peoria and Parrett tractors. The new company is a subsidiary of the Weber & Damme Wagon Co.

C. J. Snyder, Little Rock, Ark., has obtained a 10-year lease on the service shop formerly conducted by the Shoemaker-Bale Auto Co., State agents for Ford cars, and will conduct it as a repair shop and service station advertising as "Ford specialist." Nineteen men are employed and additional equipment has been ordered.

Fred Cline and Hugh Adkins, Neosho, Mo., will open a garage.

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Fisher & Baker, New Franklin, Mo., will open a garage.

The Steele-Leslie Motor Co., Houston, Tex., has opened a new salesroom and service station at 1510-1514 Main Street.

Gates & Warner, Chillicothe, Mo., will build a garage and showroom. They are dealers in the Hudson and Overland cars.

Albert E. Norman, Chillicothe, Mo., has bought his partner's (E. E. Murphy) interest in the Chillicothe Motor Co.

Geo. Maxwell, Gentry, Mo., has bought the Gentry garage.

Stonum & Elliott, Lamar, Mo., are now open for business in their new garage. They are dealers in the Buick.

Nye & McClean, Parnell, Mo., have bought the garage of Roof & Gray.

Ed. Correll, Mexico, Mo., has bought the Brown garage.

W. G. Ball, Mexico, Mo., has become the partner of Kirk Roberts, and the two will open a garage.

Harry Petit, Junction City, Kan., will erect a cement garage 50 x 125.

The Surritte Bros., Junction City, Kan., have purchased the Jacobs garage.

John Seahill & Co., Kansas City, Kan., have purchased the garage and repair shop of Banks & Co.

J. C. McNaught, Iola, Kan., has bought the repair department of the Palace garage.

Harve Belkap, Kiowa, Kan., has purchased the Beers' interest in the garage firm of Smith & Beers.

Dixon & Willard, Oberlin, Kan., have bought the Black garage.

B. M. Grant, Ottawa, Kan., has bought the garage of Wm. T. Gilliland.

Orr & Esfeld, Dundee, Kan., have opened a garage. They are dealers in the Jones Six.

H. R. Rose & Son, Stafford, Kan., will erect a 50 x 120 garage. They are dealers in the Ford.

August and Otto Kurth, Efferle, Kan., have purchased a garage building and will open soon.

The Phillips-Buxton Motor Sales Co., Kansas City, organized by F. D. Phillips and L. A. Buxton, has closed a contract for the Chalmers distributing agency in this city and a large portion of Missouri and Kansas. The company will have its headquarters and showrooms at 2615-17-19 Walnut Street.

D. F. Hale and Jas J. Costa, Jr., Anthony, Kan., have opened a repair shop and salesroom. They are dealers in the Grant Six and Chevrolet.

The Santa Fe Trail Garage, Burlingame, Kan., has expanded to the extent of taking in the adjoining lot. The building will be of brick, fronting on the entire two lots and extending further to the rear than the present building.

The Oakland-Paige salesroom, Dodge City, Kan., will be finished soon. It is said to be the finest west of Hutchinson.

R. W. Jaenick and W. R. Sparks, Glade, Kan., have bought the garage of Ed Hoover.

L. H. Snyder, Gove, Kan., will soon begin the erection of a 40 x 60 cement garage.

The Wolfley Bros., Hiawatha, Kan., are building a garage.

The Crosier & Bond Co., Charleston, Mo., is enlarging and remodeling its garage.

J. W. Miles, Hale, Mo., has purchased the C. C. Lyons garage.

Lambeth & Dubrouillet, Linn, Mo., will convert the Union Hotel Building into a garage.

The Legrande Garage, Sedalia, Mo., has leased quarters in the Elks Building and fitted them up for storage and sales.

The Auto Supply Co., Dodge City, Kan., has incorporated with $20,000 capital, and these stockholders: T. H. Spaulding, Jr., A. J. Jackson, Irene B. Jackson, all of Hutchinson.

The Firestone Tire Co. has leased part of the Evans building, Wichita, Kan., for three years for a factory branch, and will move into it April 1. George K. Meeks is branch manager.

J. W. Clower has been made sales manager og the Bush-Morgan Motor Co., Kansas City, Mo., distributer of Paige and Dort; Clower has been salesman with the firm for a year, and previously was with the Chalmers and Pierce-Arrow companies.

The Velie Motor Car Co., Kansas City, is using its service department in its new building, on which $40,000 was expended; Frank Ashmore, formerly general service man at the Velie factory, will manage this department of the Kansas City branch. E. D. Davenport is manager of the Velie Motor Car Co. in Kansas City.

MIDDLE WEST

W. T. Dalton, Fennville, Mich., will conduct a painting and refinishing establishment in the John Martin building.

The Durand Auto Co., Durand, Mich., incorporated for $6,000 by Charles E. Van Slyke, John C. Obert and Elbert Henry, will deal in automobiles and operate a garage.

O. A. Rasmussen, Greenville, Mich., will build a two-story Ford garage and accessory store, 70 x 120 ft.

Howard Lane, Saranac, Mich., has purchased the interest of his partner, Robert Farmer, in the Fix-it Garage and will continue the business.

Edwin Wheeler, Coldwater, Mich., Ford dealer, will soon take possession of his new garage.

A. H. Hartshorn, Deckerville, Mich., Ford dealer, has formed a partnership with George L. Jones. The company will erect a new garage and service station and a line of accessories and repairs will be carried.

A. E. Saum, Niles, Mich., is erecting a new garage, 66 x 60 ft., on Short Street.

The B-P Motor Co., Peoria, Ill., has let the contract for a new garage and sales headquarters at 118-122 North Madison Street. The building will be three stories and will furnish 62,000 sq. ft. The building will have a front of white enamelled brick with columns of terra cotta. E. T. Beatty is president of the company and J. S. Pfeiffer, secretary.

W. C. Robbins, Champaign, Ill., has opened an automobile exchange at 107 and 109 North Market Street and will buy and sell used cars. He will also conduct a sales agency for new cars and operate a repair shop.

Lee Newton, Middletown, Ill., has purchased the garage in that city and has taken Harry Miller into partnership. They will make a number of improvements.

The Cadillac Co., Decatur, Ill., has taken a lease upon the garage building now under erection at 306-310 East William Street. This will be one of the finest plants in the city and a number of firms have been bidding for the lease. It is expected that the structure will be ready for occupancy March 1.

The Atwood Garage Co., Danville, Ill., has been reorganized. John R. Smoot, Collison, Ill., has purchased an interest in the concern, and the capital stock has been double. The plant on Walnut Street is to be enlarged and a number of improvements made to take care of expanding business.

The Crescent Automobile Co., Peoria, Ill., has been incorporated, with capital stock of $10,000. Incorporators are E. T. Knudson, G. W. Hubbard, and H. J. Ingram. It is proposed to do a general garage business and operate a sales agency.

I. B. Metcalf, Oneida, Ill., has opened a garage and sales agency and will carry accessories.

Millet & Dial, Moline, Ill., have sold their garage at 1521 Third Avenue to Lyon & Schenck and the new firm was given possession Feb. 1. Several improvements are proposed.

The Ford garage and sales agency, Rockford, Ill., will be transferred from the present quarters on North Court Street to a new building on South Main Street May 1. The contract was let this week and the building will be of two stories, 80 x 156. The first floor will be devoted to the showroom, supplies and service station, and the second to storage and other purposes. The plant when completed will be one of the largest in Rockford.

Manning Bros., Lockport, Ill., have purchased a lot on State Street, and will shortly erect a garage to cost $7,000. The structure will be 45 x 120, two stories. Occupancy is promised on April 1. A sales agency will be conducted and supplies carried.

L. R. Martin, Decatur, Ill., who has been conducting a garage and service station at 305 East Main Street, has leased a room at 210-212 West Wood Street, due to expanding business, requiring larger quarters. He moved into his new quarters Feb. 1.

The Corn Belt Automobile Co., Taylorville, Ill., has been incorporated with capital stock of $10,000. Eugene Davis will be the manager and Elmer Orr, secretary. The company will maintain a sales agency, and do a general repair, storage, and supply business. The plant will be open for business about March 1.

Glenn and Guy De Land, White Heath, Ill., have purchased the garage of Lee Scott and Douglas Blacker and will operate it.

Alva Motter, Knoxville, Ill., has purchased a building in Wataga, Ill., and will remodel it for garage purposes. He will conduct a storage and repair shop and handle supplies.

J. E. Coleman, Canton, Ill., has found it necessary to add another story to his garage to take care of expanding business. The addition will be ready about April 1.

The Brown-Hare-Parsons Co., Detroit, has been formed to market accessories throughout Michigan. The active members of the new company are R. E. Brown, W. C. Hare, and George K. Parsons. The trio are all salesmen and have been connected recently with the sales force of the Ford Motor Co. The company will represent in this state the Universal Car Equipment Co., the Tireoid Co., C. Shapiro Co., Detroit Cartridge Lock Co., Safety Mfg. Co., and the Disco Co. The company will shortly send out a force of salesmen to cover the field. The offices are at 580 Woodward Ave., Detroit.

The Badger Sales Co., New London, Wis., has been organized by J. C. Lyon and R. H. Gehrke to deal in motor cars. Salesrooms have been opened in the Dedolph Building, North Water Street.

The City Garage, Knapp, Dunn County, Wis., has purchased the Smith Bros. garage and repair shop business at that point and will consolidate operations.

The Robinson-Oscar Auto Co., Washburn, Wis., has been appointed exclusive dealer in Overland cars for Washburn, Barksdale and vicinity.

The Muscoda (Wis.) Development Co., a civic organization, is advertising the fact that Muscoda is badly in need of a storage garage and says an ideal site is available.

E. E. Beers & Co., Sun Prairie, Wis., announce that A. H. Fuhrmann has sold his interest to William Pfaff, formerly of Bristol, Wis., where he was a sub-dealer of the Beers company, Ford dealer.

O. H. Harrington, Waupaca, Wis., has purchased the Wagner Bros. machine shop at Burlington, Wis., and on March 1 will open a garage and repairshop. Remodeling work is under way and some new equipment will be installed.

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The Detroit Auto Radiator Co., 188 Fifth Street, Milwaukee, has taken larger quarters at 182 Fifth Street.

The University Avenue Garage, Madison, Wis., has purchased the Olympic Theatre building, adjoining, and is remodeling it into a garage and repair shop addition. The storage space thus will be increased to 100 cars. O. D. Smart and J. H. Phillips are the proprietors.

The Nebel Engineering Co., Stevens Point, Wis., has been organized by C. E. Nebel to deal in motor car supplies and accessories, electrical goods, farm lighting plants, storage batteries, etc.

Ouf Enger, Chippewa Falls, Wis., has leased the former plant of the Bloomer Machine Works, Bloomer, Wis., and will open a commercial machine and motor car service and repair shop.

Herman E. Kristofske, Grand Rapids, Wis., has opened a repair shop and service station in the Daly building, Second Street.

The Overland-Wausau Co., Wausau, Wis., Overland distributer for north central Wisconsin, will take bids about February 20 for the erection of a $40,000 garage, service station and warehouse, three stories high, 60 x 110 ft., of brick and concrete.

The Eagle Garage Co., Plattsville, Wis., has been reorganized and the capital stock increased to $40,000. F. H. Laughton and R. A. Shepherd have sold their interest to ten stockholders. Dennis Harm retains his interest and the general management.

Leach & Christenson, Hartford, Wis., announce the appointment of Harry W. Ewing as superintendent of the repair shop. Mr. Ewing was associated until now with the Knickerbocker Garage, Hartford.

The Public Service Garage, Appleton, Wis., has opened for business at 680 College Avenue, in the former Armory building, which has been completely remodeled and equipped with a repair shop. I. D. Segal is president and W. H. Richman is secretary-treasurer. Ray Foster is superintendent of the service department.

Ryall's Garage, Ladysmith, Wis., has completed extensive changes in its garage and repair shop. A complete stock and tool room has been partitioned off, to be in charge of C. C. Kile. The repair shop has been enlarged and systematized.

The Calumet Garage Co., Calumet, Mich., on February 1 moved into its new quarters, formerly occupied by the Michigan Auto Co.

The Michigan Auto Co., Calumet, Mich., has moved into the Quello building, Portland and Seventh Streets, pending the erection of a modern fireproof garage and repair shop building.

The Appleton Auto Co., Appleton, Wis., has opened two additional service stations in Outagamie County, at Stephensville and Freedom, making in all five establishments, the other three being located in Appleton, Hilbert and Dale. A sixth shop will be opened at Sagole as soon as a building can be erected in the spring.

The Racine-Western Sales Co., Racine, Wis., has been organized, with $5,000 capital stock, by W. L. Gittings and J. E. Davies, to manufacture and market metal polish and other motor car and industrial specialties.

Russell Evans, Racine, Wis., proprietor of the Evans garage, Seventh and Wisconsin Streets, has been appointed Cadillac dealer for Racine and immediate vicinity.

Kurt Schapper, New London, Wis., has opened an exclusive repair and service shop at 9 South Pearl Street.

The Mason & Kraeplin Motor Co., Whitewater, Wis., has taken occupancy of its new offices and showrooms in the Winchester-Partridge building.

Herman Metzig, Berlin, Wis., is establishing an oxy-acetylene welding and cutting shop.

The Toonen-Barlament-Wright Co., De Pere, Wis., has completed a 50 x 60 addition in the rear of its garage. The front of the building has been rebuilt into showroms, new offices and a rest room for women.

R. D. Clark, Oconto, Wis., has purchased the Munsert Garage and will be Ford dealer and handle U. S. tires and Stewart accessories.

The Weinberg Auto Co., Platteville, Wis., will occupy the Beckwith livery stable, which is now being reconstructed for garage and repair shop purposes.

Daniel Cram, Palmyra, Wis., has sold his garage and repair shop business, purchased a year ago from Otto E. Scherer, to D. J. Williams & Son.

The Olson & Pauly Auto Co., 441 Jackson Street, Milwaukee, state distributer of the Ross 8, will build a fireproof garage, salesroom and service building costing $20,000, on Marshall Street. It will be 60 x 120, two stories and basement, of reinforced concrete.

The Neyl-Shanke Auto Co., 2513 Vliet Street, Milwaukee, expects to be able to take occupancy of its new $15,000 garage on March 1.

Wenzel Heck, Kewaunee, Wis., who recently established a garage and repair shop in Antigo, Wis., has sold his interests at Kewaunee and will devote all of his time to the new business. A garage will be built at Antigo in the spring.

The Valley Inn Garage Co., Neenah, Wis., has been organized by L. H. Bleecker and John Ingfer and will build a garage, salesroom and service building opposite the new Valley Inn, a $100,000 hotel building at Neenah, which recently was opened.

G. C. Longendyke, Cuba City, Wis., has rented the Dagenhardt building, until recently occupied as a garage and vulcanizing shop by Ben Hansen, and will enlarge his tire and repair business to include a public garage and service station.

The Auto Sales Co., Milwaukee, has engaged Edward A. Juul, architect, Sheboygan, Wis., to prepare plans for a three-story garage and service station, 60 x 120, of reinforced concrete construction. Bids will be taken Feb. 15 or 20.

Colombe Bros., Houghton, Mich., Lexington dealers, have opened a garage, salesroom and repair shop at Shelden and Franklin Streets, Houghton.

M. O. Flom, Stoughton, Wis., for 6 years a member of the firm of Oscar & Flom, dealers, has been appointed Buick and Studebaker dealer in Stoughton and vicinity. Headquarters have been opened in the Erickson building, Water Street. Flom will continue to represent the Ford.

W. H. Murphy, Fox Lake, Wis., has made an installation of oxy-acetylene welding and cutting apparatus in his garage and repair shop.

The Storley Auto Co., Eau Claire, Wis., has moved its salesrooms from 316 Main Street to the Moldenhauer-Damm building at Main and South Farwell Streets, and will use the old quarters for repair shop and service station. The company is Grant and Chandler dealer.

The Olympian Motor Sales Co., Milwaukee has established permanent salesrooms on the ground floor of the Hotel Pfister, Jefferson and Wisconsin Streets. Dr. J. F. Schreiber is manager.

The Kinney Motor Car Co., Eau Claire, Wis., recently organized with a capital stock of $50,000, has taken quarters at South Barstow and Grey Streets and will be northwest Wisconsin distributer of the Mitchell, Maxwell and Oakland. Thirty sub-agencies already have been established.

Harry E. Heimberger has been appointed assistant manager of sales of the Automobile department of the Vacuum Oil Co., Indianapolis, to succeed C. B. White, who has been promoted to the superintendence of the company's branch in Des Moines, Ia.

Show Effect Without Show Confusion



This is the way the Champion Spark Plug Co. arranged its exhibit in the Hotel Astor during the New York show. It was possible to talk business here without interruption from the usual show crowd at the Palace.

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Has Plan for Eliminating All Disputes

FRED A. BEAN, who operates the Grosse Pointe Motor Service Station, Detroit, has devised contracts for use in three phases of his business in order that there may be no misunderstandings. These place the liability and responsibility, and cover (1) relations with the employee, (2) supplying drivers to customers, and (3) the usual storage and service trade.

These contracts should work out well. Their greatest merit seems to be that they eliminate misunderstanding. When an employee goes to work he knows what his relations are; when a car owner borrows or hires a chauffeur from the garage the owner knows what the relations are as applied to the owner, the garage and the driver; and when a car owner puts his car in on storage he knows just what he may expect for his money. The three contracts appear below. Has any other Motor World reader any arrangement of this nature?

Employee's Contract

It is hereby agreed, between the GROSSE POINTE MOTOR SERVICE STATION, hereinafter called the "Service Station" and John Doe, hereinafter called the Applicant, as follows:

That the "Service Station" does hereby employ the said Applicant in the position of Electrician for a period of one year, commencing Dec. 1, 1916, or so long as the services of said Applicant shall be satisfactory, at a salary of twenty ($20.00) dollars per week for four (4) weeks and twenty-five ($25.00) dollars per week thereafter.

That said Applicant does hereby agree to give his whole time and services to the said Service Station.

That said Applicant does hereby agree to furnish a Surety Bond in the Sum of Five Hundred ($500.00) Dollars by a Bonding Company acceptable to the Service Station. The cost of the said Bond to be paid by the Applicant and to be refunded to said Applicant by the Service Station provided he completes one year of service.

That Applicant hereby agrees that he will not hold the Service Station liable for any personal injuries beyond that which is required by the State Industrial Accident Board as prescribed in Act No. 10, Public Acts of 1912.

That the Applicant will keep himself informed concerning the rules and special orders issued for the management and operation of the business and see that their intent is rigidly and faithfully carried out. Any infraction of such rules or orders shall be considered as a breach of this agreement.

That the said Applicant will be and is responsible for any loss or damage either in or out of the garage of all cars, moneys, supplies, tools or equipment which may come under his care or supervision at any time, and that any loss to this company occasioned thereby, shall be deducted from the next regular pay of said Applicant.

That the promotion of the position of the Applicant or a change of his salary shall in no way abrogate the intent of this agreement.

That the Service Station may, with cause, terminate this Agreement by giving the Applicant five (5) days' notice in writing and refunding to said Applicant the cost of the above mentioned Surety Bond, pro rata for its unexpired term.

GROSSE POINTE
MOTOR SERVICE STATION.

Dated.....191..

.....
Manager.

.....
Witness.

.....
Applicant.

Service Contract

It is hereby agreed, between the GROSSE POINTE MOTOR SERVICE STATION, hereinafter called the "Service Station," and Wm. Jones, hereinafter called the "customer," as follows:

That the Service Station will furnish the customer storage space in its Garage at Grosse Pointe for one Hudson Roadster Automobile and furnish service known as class A and consisting of daily wash and metal polish, daily cleaning of windows, one delivery and call for each twenty-four hours, two inspections and oiling of car per month, tires, radiator and storage battery to receive proper care.

The Service Station does not agree that the service above described shall be continuous and does not assume any liability or agree to rebate to the customer, when such ommission are the result of strikes, other labor troubles or causes beyond its control.

That the Customer agrees to pay the Service Station the sum of Twenty-five ($25.00) Dollars per month in advance on the first of each calendar month and shall be held as payment of the full calendar month whether the space is occupied by the customer or not, extras to be paid for by the customer when billed by the Service Station.

That the Service Station shall not advance the prices quoted herein except on thirty days' written notice of such intention.

That the Customer and his agents will conform to all the rules of the garage.

That the Customer hereby assumes all liability for fire, theft or damage to his automobile and its contents while in the garage or for any damage to said customer's automobile or to the property or life of others while said customer's automobile is being delivered or called for, whether caused by the negligence of the employee or agent of the Service Station or not.

This agreement may be cancelled by either party by giving written notice of such intention not less than fifteen (15) days before the end of any calendar month.

GROSSE POINTE
MOTOR SERVICE STATION.

Dated.....191..

Witness.....

By.....Mgr.

.....Customer.

Driving Contract

It is hereby agreed, between the GROSSE POINTE MOTOR SERVICE STATION, hereinafter called the "Service Station," and John Doe, hereinafter called the "Customer," as follows:

That in consideration of the Service Station furnishing a driver for the Customer's automobiles, the Customer agrees to pay for said drivers' services at the rate of Seventy-five (75c.) Cents per hour, together with all necessary expenses of street car fare, meals, etc. Time to be calculated from the time the driver leaves the Service Station until his return.

That the Service Station will furnish only such drivers as do not use intoxicating liquors and who hold a State Chauffeur's license as provided for in Act. No. 302, Public Acts of 1915.

That the Customer hereby relieves and guarantees to indemnify the Service Station against all liability, damages or loss which might in any way occur to life or property either through the negligence of said driver or otherwise.

That the Customer is not to request the driver to violate any of the rules of the Service Station or any of the traffic ordinances of the municipality in which they are driving.

That the Service Station is not obligated to furnish such drivers when the Customer gives insufficient notice or when the time of all its employees has been previously engaged.

GROSSE POINT
MOTOR SERVICE STATION.

.....
Manager.

The BEMB-ROBINSON CO., Hudson dealer in Detroit, of which Walter Bemb is the proprietor, has added an Autoped to its service equipment, which for several years has included black and white emergency service cars, like those used by gas companies. While the Autoped really aids in quick service, its greatest value is in the advertising it gives through its white-uniformed and labeled rider and its novelty as a vehicle



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A Department of

Better Mechanics

No. 10

BRAKE ADJUSTMENTS ON THE DODGE

THE brakes should be inspected every 500 miles to see that they are wearing evenly, and operating properly. All pins, clevices and cams should be oiled and the brakes adjusted. With this periodic attention, the brakes will give almost indefinite service. Prompt adjustment is essential, however, and relining, when necessary, can best be done as follows:

Poor Adjustments

1. One wheel locking and the other sliding when the brakes are applied.

2. Slipping brakes. Caused by worn or greasy linings.

3. Grabbing, rattling or dragging brakes.

BRAKE INSPECTION

1. Jack up wheels; throw gears into neutral.

2. Note whether the external bands are concentric with the drums.

3. Note whether the bands are wearing evenly, *and whether both external bands are worn the same amount.*

4. Note whether brakes release the instant the pedal is released.

5. See that wheels turn freely, and that brakes are not dragging.

Removing the Wheels

1. Remove the 8 nuts holding the driving flange in place. *A speed nut wrench should be used here.*

2. Draw out axle shaft.

3. Using the special wrench shown in Fig. 1, remove the wheel locking ring, after loosening the pinch cross bolt.

4. Apply the special puller shown in Fig. 2 and remove the wheels.

(*Always place a horse of some sort beneath the rear axle when removing a wheel, as the jack or hoist may fail.*)

5. Remove all pins, nuts and thumbscrews holding brake bands to the axle, and remove the bands from the car.

6. Examine all clevices and pins for wear, clean all parts with kerosene.

Previous Articles

Subject	No.	Date of Issue
Overland—Main and connecting rod bearings	1	Dec. 13
Cadillac—Cam and fan-shaft driving chains	2	Dec. 20
Maxwell—Rear axle repairs	3	Dec. 27
Chevrolet—Clutch repairs	4	Jan. 3
Borg & Beck—Clutch adjustments	5	Jan. 10
Hudson—Oil pump adjustments	6	Jan. 17
Reo—Clutch adjustment	7	Jan. 24
Buick—Rear axle adjustment	8	Jan. 31
Chalmers—Valve and Ignition timing	9	Feb. 7

7. Using a chisel, remove old linings from the bands, *taking care not to mutilate the old linings so that they may be used for templates in cutting the new linings.*

(*The linings of the external brakes are each 43½ in. long, 2¼ in. wide and 3/16 in. thick. Those of the internal, or emergency brake, are each 35 in. long, 2 in. wide and 3/16 in. thick. Any of the standard brake linings may be used, but wire woven, asbestos fabric type is best. The makers can supply this lining ready cut for use.*)

8. Wire the new lining to the band in the manner shown in Fig. 5, securing it in enough places that the lining hugs the band all the way around. If this is not done, the lining will form a straight line between the rivets when the job is done, pulling the band out of round and causing the brakes to drag and slip.

9. Drill the rivet holes in the lining.

10. Countersink the band for the rivet heads.

11. Using the countersunk head brass rivet with a hollow stem, as shown in Fig. 6, secure the lining to the band. *This style rivet has been found to be the best for this work.* It is readily inserted, quickly headed over in the manner shown, and holds the lining securely. Split copper rivets can be used, however. *Never use anything but a copper or brass rivet, as these do not grove the drum.*

12. Place the dummy drum shown in Fig. 3 inside the band and lining, and note whether the band is concentric with the drum. If not, spring the band until this is the case. Do the same with the internal bands.

13. Replace the internal bands on the axle.

14. Slip the dummy drum in place over one of the bands.

15. Tighten the pull rod of the emergency brake until the bands show an even clearance of about .03 in. from the dummy drum all the way around, when the emergency lever is in the off position.

The blade of an old hack saw, Fig. 4, makes a good gage for this adjustment, and the brakes on both wheels should be adjusted together.

16. Replace the external bands.

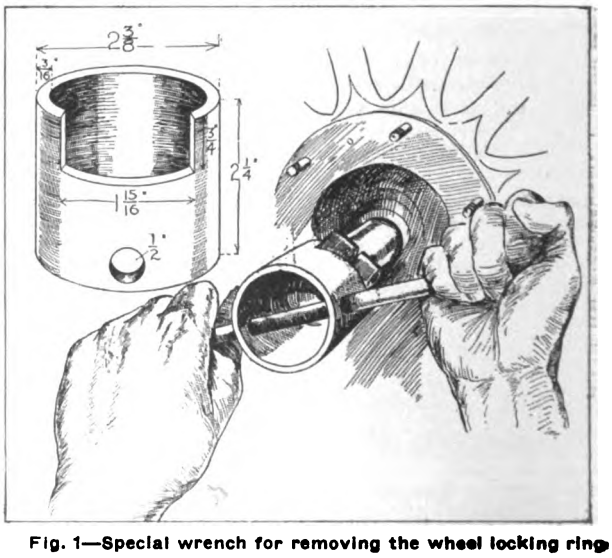


Fig. 1—Special wrench for removing the wheel locking ring

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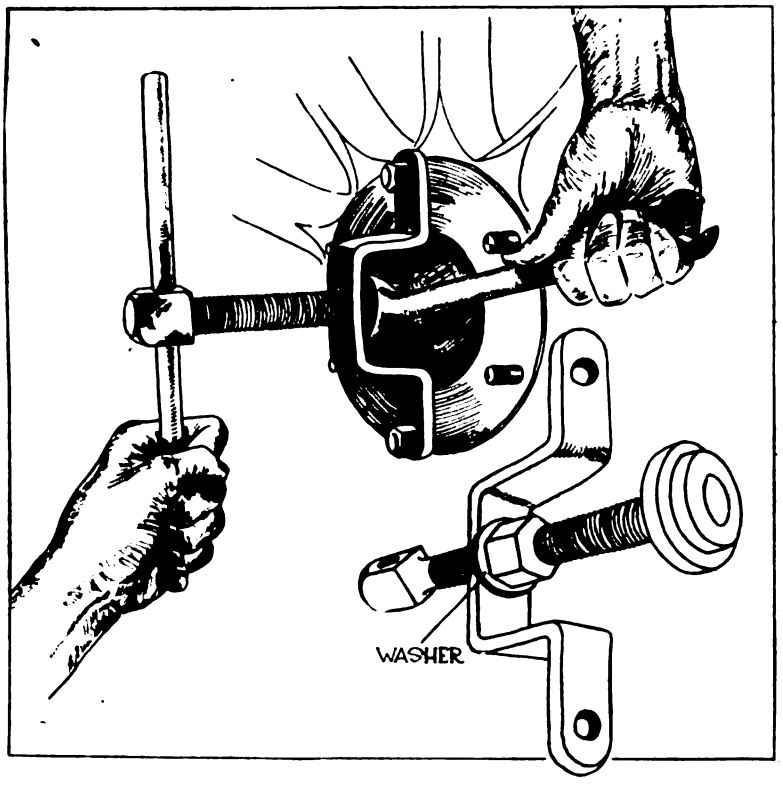


Fig. 2—Above: Special puller for removing the wheels

Fig. 3—Upper left: Dummy drum for determining concentricity of band. Fig. 4—Upper right: A hacksaw blade makes a good thickness gage. Fig. 5—Lower left: the new lining is wired in place. Fig. 6—Lower right: Hollow rivets are used.

17. Slide the dummy drum into place on one wheel.

18. Tightening the top hanger, or band support, then the rear hanger, and finally the adjusting nut and thumb screw on the yoke, balance the position of both external brakes, so that the hack saw blade shows an even clearance between the bands and the dummy drum. The brake rod should be lengthened until the first pressure of the foot on the pedal starts to contract the band.

20. Remove the dummy drum, oil all parts, and make certain that all nuts and bolts are tight, and that all cotter pins are in place.

21. Replace the wheels, packing the bearings in cup grease.

22. Using the special wrench, tighten the adjusting ring until the wheel turns freely with little side play.

23. Tighten cross screw, locking the adjusting ring in position.

24. Try wheel adjustment again to see that it has not been changed.

25. Replace axle drive shaft and bolt flange to wheel.

If properly adjusted, the brakes will set equally on both wheels, and stop the car easily and smoothly. This can only be found by a road test, and a road test should always be made after relining the brakes.

MAINTENANCE

1. Oil all working joints of the braking system every 500 miles.

2. See that the brakes are wearing evenly.

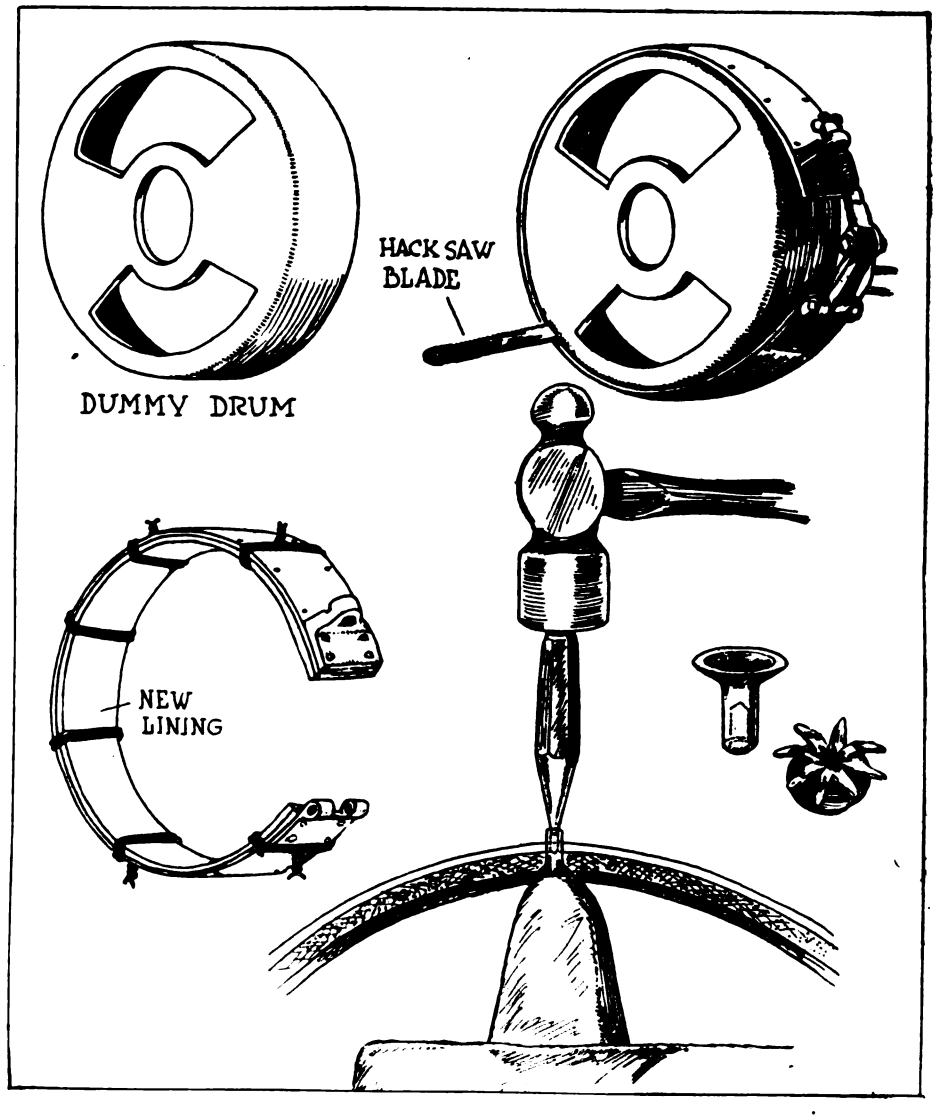
3. See that the brakes release the instant the pedal or lever is released. This can best be done with the wheels jacked up.

4. Adjust the external brake to the hack saw blade clearance, and tighten the service brake rod until the brake starts to bind at the first pressure of the pedal.

The emergency brake wears but little, and if quiet and holding, needs only lubrication of the pins, etc.

Next Week

The Man Also Advertised His Breakfast



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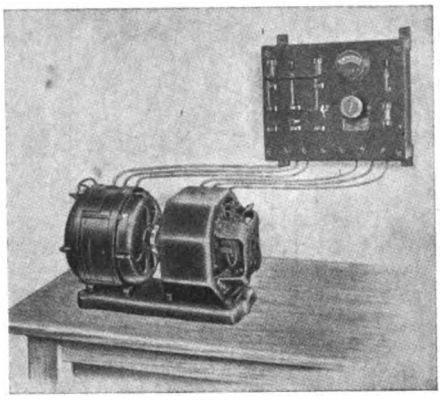
Accessories & Supplies



LITTLE GIANT CONVERTER

Little Giant Converter Co., Leader-News Bldg., Cleveland.

This device is for charging storage batteries from an a.c. circuit. It consists of an a.c. motor which is direct-connected to the generator which does the charging. The whole unit is mounted in a frame which carries the rheostat, ammeter, fuses and so forth. A transformer is mounted on the main shaft in front of the commutator and the voltage is stepped down by the transformer and the current is led into the armature and commutator. It is made for any voltage, phase, frequency or capacity. Among the standard ratings are those for charging 3 to 18 cells, 6 to 36 cells, 24 to 48 cells and one for 60 cells capacity. The machine is simply connected to the a.c. line, the load is put on and the handle on the front of the switchboard is turned to the number corresponding the number of cells to be charged, and then the main switch is closed.

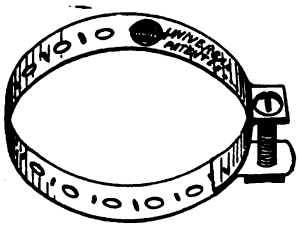


Little Giant converter for charging storage batteries from an A.C. circuit

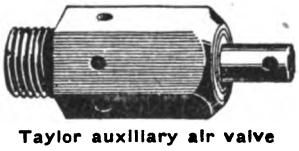
STANDARD SPEEDOMETERS IMPROVED

Standard Thermometer Co., Boston.

The speedometer and cowl board for Fords is covered with high grade imitation leather and for 1917 this will be cemented in place instead of stretched over the board. An exclusive cowl board design has been brought out for the Ford couplet and sedan. The Standard speedometer for Fords has a 60-mile speed range covering half a circle, a 10,000-mile season odometer and a 100-mile trip register.



Universal hose clamp



Taylor auxiliary air valve

HINSON'S TEXTILE AUTO BUCKET

Powers Mfg. Co., Brighton Station, Cincinnati. PRICE, $12 per dozen.

This collapsible bucket for filling radiators is made of 12-oz. army duck and treated with a waterproofing compound which also prevents mildew. The capacity is 2 gal. It has a galvanized wire shaped top and spout which will not rust and a strap handle.

UNIVERSAL HOSE CLAMP

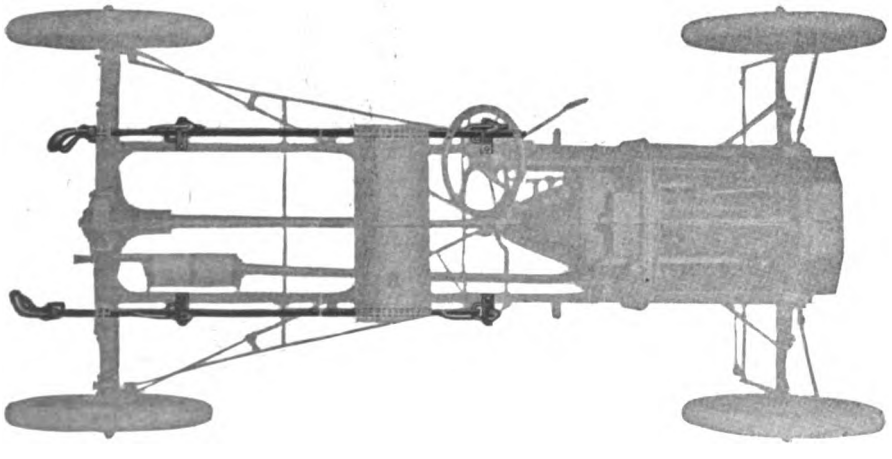
Universal Clamp Mfg. Co., Concord, N. H.

A ribbon hose clamp which is adjustable to all sizes of hose. It is a single piece, will not buckle or cut the hose, tightens with little effort and grips the hose evenly all around. It is made from strong galvanized steel. Adjustability is obtained by a series of holes ⅝ in. apart into which the clamping nut fits. The Universal Senior fits all sizes from 1 to 3 in. and the Universal Junior from ¼ to 1 in.

TAYLOR AUXILIARY AIR VALVE

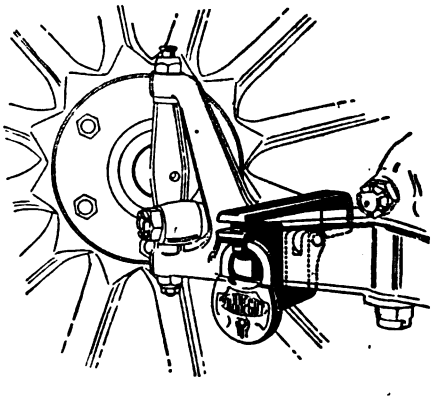
Taylor Mfg. Co., Detroit. PRICE, $1.50.

A needle valve admits additional air to the intake manifold and is controlled by a cable connected to the spark lever. Only when the lever is advanced beyond a certain point is the valve allowed to open. Additional air to the mixture is only desirable when it is necessary to operate the motor with the spark advanced. In other words, when the motor is pulling hard at low speed, the spark should be retarded and at this time a full strength mixture is required, but when the spark is fully advanced the car is usually being operated with throttle partly open and at this time there is no objection to delivering the mixture to obtain increased economy.



ECONOMY BODY LOCK

A device which enables bodies to be exchanged on the Ford chassis in 10 min. A touring car body may be substituted for a delivery body or vice versa, and the car does double duty. Price $35. Economy Body Lock and Cradle Co., Chicago



SHUMAN LOCK FOR FORDS

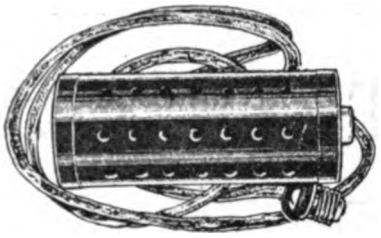
A lock which goes around the axle and the tie rod. Price $1. Guarantee Tire and Rubber Co., Indianapolis

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SUPER DREADNAUGHT TORCH

For heating and straightening automobile parts while in place or any use where intense heat is required. It has a double burner and uses kerosene or gasoline. PRICE, ½ gal., $20. Other types from $4 up.—P. Wall Mfg. Supply Co., 3068 Preble Avenue, Pittsburgh, Pa.



HUGHES HEATER

An electric heating device for keeping the contents of the hood warm. Current may be obtained from any house lighting socket. PRICE, $4.—Hughes Electric Heating Co., 211 West Schiller Street, Chicago.

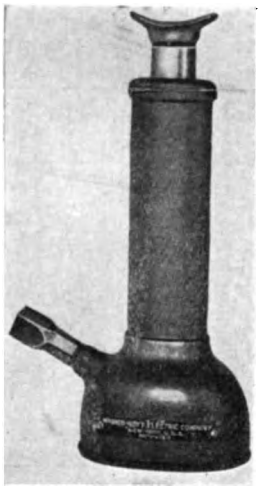


ALL-SEASON TOPS

An example of the demountable top mounted on a Briscoe. Tops are made to order for any car.—All-season Body Co., Jackson, Mich.

BEN JACK

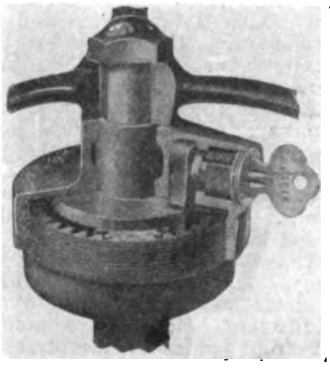
A long folding handle operates it. A spiral screw engages dogs on the lifting bar and is operated by a gear and pinion. Rotating the handle in one direction raises it, and in the other lowers it. It is made of steel throughout. PRICE, $6.—Wagner-Hoyt Electric Co., 1902 Broadway, New York.





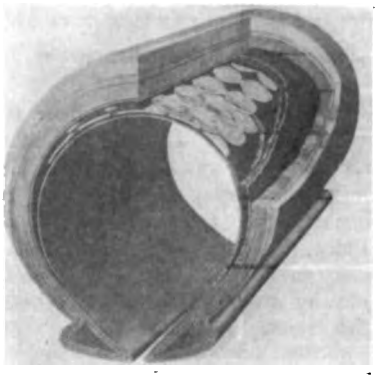
AUTO HEEL REST FOR FORDS

Mounted flat on the floor board this rest saves the rubber matting and at the same time locates the heels. It is made of aluminum and is 4½ x 7½. This model completes the line of rests which are made for all other cars. PRICE, $1.—J. L. Lucas & Son, Bridgeport, Conn.



MUELLER LOCK FOR FORDS

The lock is carried in a casting which is placed between the wheel and the steering post and is locked by an integral multiple tumber lock. PRICE, $5.—Reliance Co., 428 W. 38th Street, Chicago.



ARMORED INNER TIRE

There are seven layers: Two of fabric; three of rubber and two of metal disks. The metal prevents puncturing and the fabric guards against blowouts. PRICE, 30 x 3, $8; 34 x 4, $11.50; 36 x 5, $17.—Armored Tire Co., 1323 Michigan Avenue, Chicago.

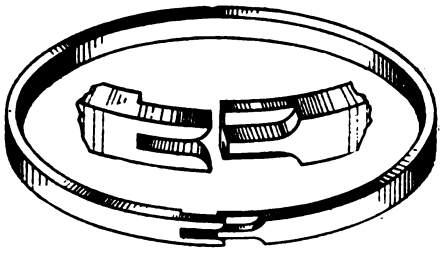


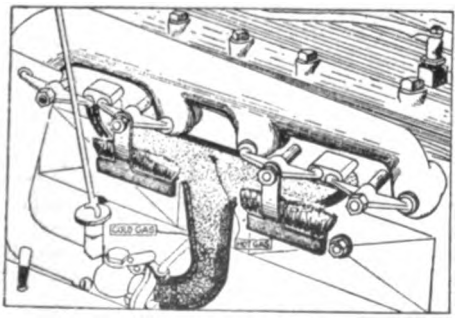
BERGIE SPARK PLUG

The peculiar parallel electrodes are designed to give several sparks instead of one. The plug is made in all types. It has a heavy petticoat porcelain insulator and a heavy shell.—Bergie National Spark Plug Co., Rockford, Ill.

PERFECT PISTON RING

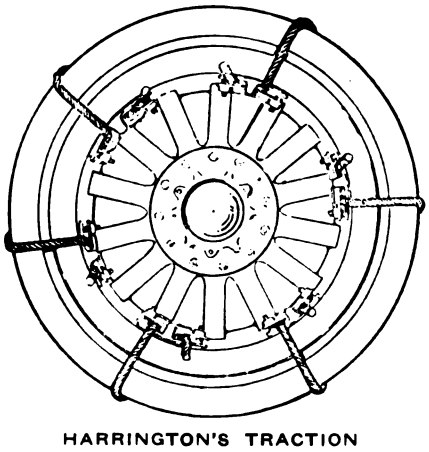
A one-piece concentric ring with a tongue and groove joint. The simple construction is designed to prevent the collection of carbon. PRICE, under 4 in., $1; over 4 in., $1.25.—Metal Products Co., St. Louis, Mo.





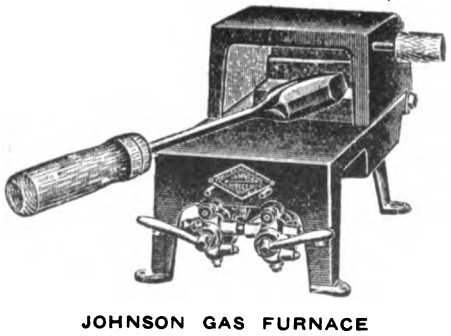
SANDBO GAS GENERATORS

Two lighted wicks, one on each side of the manifold, supply heat for easy starting in cold weather. They are moistened with gasoline. PRICE, $1.50.—Sandbo Starter Co., Rock Island, Ill.



HARRINGTON'S TRACTION PRODUCER

An anti-skid for trucks with six units per wheel. Longer life is claimed for the cable and its flexibility minimizes the wear on the tire.—Stanley Skid Chain Co., Boone, Ia.



JOHNSON GAS FURNACE

This furnace is for soldering, forging, case-hardening, tempering and the like. It is equipped with auto-blast Bunsen burners of the direct jet type, and give instant heat of 1,600 or 1,800 degrees.—Johnson Gas Appliance Co., Cedar Rapids, Ia.

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SCIENTIFIC CONSTRUCTION

GARAGES
SHOWROOMS
REPAIRSHOPS

By Harold F. Blanchard

Large One-story Corner Building

Editor Motor World: We are very much interested in your ideas regarding construction of scientific, modern and up-to-date garages and salesrooms. We have a corner lot 120 ft. square.

We have a large tire and accessory business and the agency for Buick and Maxwell cars, and expect to put in storage battery service station and tire vulcanizing plant on a small scale. We also have a used car sales department. We do not intend to operate a machine shop, although it is our idea to have a service department to take care of the new cars sold and overhaul and re-paint second hand jobs for re-sale.

We enclose herewith rough sketch giving you an idea of what we believe our requirements would be, and would be glad to have you suggest the detail plans and front and side elevations.—W. A. Quebedaux.

Fig. 1 shows a suggested plan. Your plan is very good, the main objection being that the driveways are too wide.



Partial view of building showing entrance to showroom on corner

We have redrawn this plan with narrower driveways and we have suggested the arrangement of cars most desirable; one row is placed on one side of one aisle, three rows of cars are placed in the center and one row on the other side of the other aisle. You have plenty of room for this arrangement.

We think Fig. 2 is a much more desirable plan, however. We have allowed practically the same space for every department as you have, but we have made full use of the frontage space. It is essential to have your used car showroom on the street and to make as good use of the display window as you would those of the showroom.

We have omitted the offices inasmuch as we believe you will find it most convenient to place them on a mezzanine balcony in the showroom. We also notice that you have made no provision for a stock room, and consequently we have put none on our plan, but we would suggest that you place this room on the mezzanine balcony adjacent to the showroom.

SEVEN FLOOR COMPOUNDS

Indurite is a liquid for hardening concrete floors. It is applied in two coats and is designed to render the floor surface proof against oil and moisture, dustless and wear-resisting. It is easy to apply and dries over night. The covering capacity is 60 to 75 ft. per gallon. Price, 5 gal., $1.60 per gal.; 10 gal., $1.55; 30 gal., $1.50; 50 gal., $1.40. It is made by the Ceresit Waterproofing Co., 110 South Dearborn Street, Chicago.

Ceresit waterproofing compound is a plastic paste to be mixed with the water used to temper the concrete, cement mortar or cement stucco.

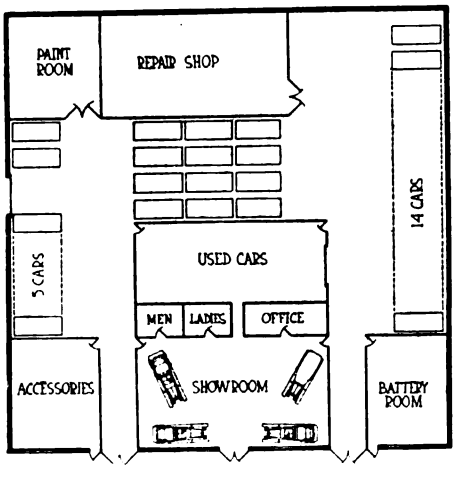
Ceresitol is a liquid to be applied with a brush for damp-proofing brick, cement blocks and porous stone. It leaves no film and does not affect the color of the surface.

Damp-proof plaster bond is a protective and bonding coating to be applied to exposed walls before the application of plaster. It eliminates furring and lathing.

Damp-proof coating is a heavy, black asphaltic material for outside foundation walls to insure against dampness.

Floor hardener is a metallic material to give concrete floors a permanent wearing surface and to prevent dusting. It is made in two colors, bluish gray and tile red.

Stone backing is an asphaltic paint applied to building stone to insure against dampness and staining.



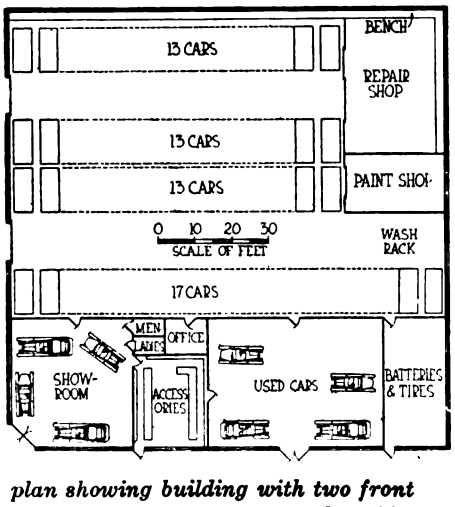


Fig. 1—Left—Modification of original plan showing building with two front entrances. Fig. 2—Right—Preferred layout with entrances on the side

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Delion Tire Branch A Model



THE new quarters of the Delion Tire & Rubber Co., at 1822 Broadway, New York—an attractive store and a compact and convenient stock room behind it, the rear door opening into a garage.

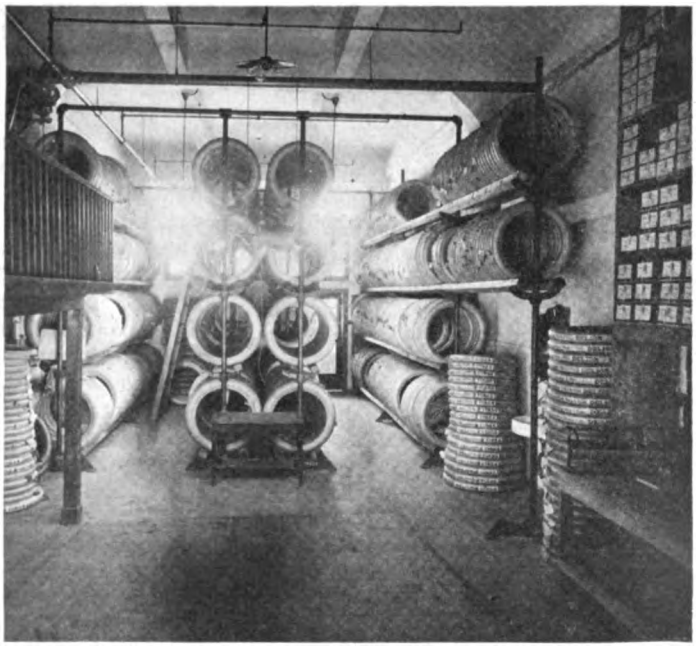
The office is finished in dark oak, and walls are painted brown and yellow, a very pleasing combination.

The casings are carried in the front of the stock room in racks which reach to the ceiling, and tubes are housed on shelves along the walls at the rear. The clerical work is done on a mezzanine balcony on one side over the shelves for tubes.



Store and office showing counter, settee for customers and manager's office in the corner





Left—Mezzanine balcony, where tire records are kept. Right—Looking forward, the mezzanine balcony is at the left

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Indiana Will Absorb 60,000 Cars in 1917

Indianapolis, Great Jobbing Center, Throbs with Prosperity--Dealers Have Little to Worry Them

By S. T. Williams

INDIANAPOLIS, Feb. 10—The pulse of Indianapolis, the "Heart of Trade," beats strong. It is the center of population of the States, and America's largest city not located on navigable water. Coal is cheap, close at hand and abundant. The Indiana coal fields, within a few miles of the city, are fifth in the total quantity mined. Shipping facilities are the best in the country.

Indianapolis is the center of a spider web of railroads placing it within easy reach of all parts of Indiana, Michigan, Ohio, Kentucky and Illinois. Seventeen steam carriers, and thirteen electric carriers center here, the latter making it the largest interurban center in the world. Close to a rich agricultural district, possessing raw material, power, labor, market and shipping facilities, Indianapolis has the five factors of industrial success.

Steady and Healthy Growth

This has resulted in a steady and healthy growth. In 1914 the population was 275,255; in 1915, 282,877; in 1916, 291,940, and it is estimated that 1917 will bring it over 300,000.

Even the interest aroused by the recent international complications did not slacken the upward trend of business conditions. Bank clearings measure a marked increase. The total of $11,057,886 for last week was approximately 30 per cent more than that of the corresponding week last year. Postal receipts were about $200 a day larger than at this time a year ago. A marked increase in building permits is noted. Though the weather for the past week has been unfavorable, the total amount issued was $130,343, against $101,716 for the same week last year. This indicates what may be expected when spring arrives.

Second Car Manufacturing Center

Indiana claims to be the pioneer State in automobile manufacturing, and the second in present day production. Ten car manufacturers are located in Indianapolis alone—Cole, National, Pathfinder, Premier, Stutz, Marmon, Empire, Colonial, Hassler and Ford Assembly Branch. Thirteen other car manufacturers are located elsewhere in the State. The production from Indianapolis for 1916 was 34,762 cars, of which 16,162 were assembled Fords. It is estimated that 60,000 cars will be sent from Indianapolis during the coming year.

From the clearing house here comes the statement that Indianapolis banks are not re-discounting their paper, and that it is the opinion of the leading bankers that there has been no re-discounting for several years. It is also stated that 20,000 Indianapolis families live off the automobile and accessory manufacturing industry. Conservative estimates indicate that the automobile industry will increase the bank clearings a total of $32,000,000 during 1917. This is some indication of the importance of the automobile industry here, and of the general prosperity and financial soundness of the city.

A Great Jobbing Center

Because of the excellent shipping and manufacturing facilities, Indianapolis is a jobbing center. Many nationally known accessory and parts manufacturers are located here.

Clean business characterizes the retail automobile dealer situation. The territory of the Indianapolis dealer usually takes in all Indiana, each having from 20 to 40 or more sub-dealers scattered over the state.

In 1914, Indiana dealers sold 26,500 cars; in 1915, 30,415 cars; in 1916, 43,139 cars, and it is estimated that 60,000 cars will be purchased in the Indiana territory in the coming year.

All classes of cars sell, particularly the popular priced cars. In the office of the secretary of state it was stated that when the price of the Ford dropped in August, the office was flooded with Ford registrations, showing that a new field had been tapped. A consistent and steady growth has been noted in the increase in the sales of the higher priced cars.

The used car situation is not a problem as yet. Two systems are used for the disposal of cars.



One of the white signs with black lettering used at the Indianapolis show to designate each booth, creating a novel decorative effect

No Used Car Problem

One is where the dealer takes the used car, places it in the garage, demonstrates it to any prospect, and sells it at a 5 per cent commission at a price satisfactory to the owner. In some instances this has worked out satisfactorily, particularly with the popular-priced cars, where the depreciation is not so marked, and the demand greater.

By the other system the dealer will only offer a low price for the used car, so that he is sure to come out clean. This seems to be most satisfactory with the higher-priced cars, as the owners are willing to dispose of the old cars at a sacrifice.

Because of the proximity to all large automobile producing centers, the railroad car shortage has not caused much difficulty. Drive-outs from the Indiana factories are practicable.

Accessories Sell Well

Accessories and supplies sell well in Indianapolis. This is largely because of the interurban service. A farmer or small town merchant almost anywhere in Indiana can jump on an electric and come in for tires, tubes, or accessories. It is estimated that about 20,000 people are carried each day on the interurban system, to and from the city, and many of these are potential or actual customers

Indiana has good roads. Of course, the business slackens up in the winter, but the problem of Illinois and the mud belt States is missing. A good roads bill is now in the Indiana Senate, proposing that the net proceeds from auto-

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mobile licenses be turned over to the fund for road construction. This amount is estimated to be from $700,000 to $1,000,000, and may be used to build up to 2000 miles of road each year until 1920. The action on this bill is doubtful, as it is meeting with some opposition from the counties.

Good Display at Indianapolis

Trucks, Cars and Accessories Segregated on Four Floors of Dodge-Cadillac Building

INDIANAPOLIS, Feb. 10—Indianapolis is having the best show it has held in the past sixteen years. Beginning with a tent show and less than twelve exhibitors, the show to date has been held in unsatisfactory quarters.

For the past few years it has been held in the Indiana State Fair Coliseum, a large, poorly heated building that was not readily accessible. The building now being used is the new home of the Dodge and Cadillac, and was turned over to the Indianapolis Automobile Trade Association to use for the show.

The building is one of the largest and best in the country devoted exclusively to the retail automobile business. It is five stories high, four of which are used for the show, giving an exhibition space of about 40,000 sq. ft.

One feature that makes the show stand out this year above the previous shows is that the spectators do not have to shiver their way through the exhibits, as the building is steam heated. Lack of heat has marred all previous shows held here.

What the Show Holds.

The show is composite. It comprises forty-five pleasure car exhibits, forty-four accessory exhibits, eighteen truck and two tractor exhibits. A census showed 41 closed cars, 75 touring cars, 49 roadsters, 27 trucks, 20 chassis, 4 electrics and 2 tractors. The dealers explained the small number of closed cars on exhibition by the lateness of the season. They are preparing to make the spring drive on open cars.

The general layout and the individual exhibits were good. On the ground floor were the trucks—somewhat crowded, but as well arranged as is possible with trucks. The second floor was given over to accessories.

Each exhibit was in a booth about 10 ft. square, uniform in appearance, and not as badly cluttered up with odds and ends as is usually the custom. The accessory exhibitors were chiefly local dealers and jobbers, and seemed to have chosen only their most popular accessories for exhibit. Pleasure car exhibits occupied the third and fourth floors. As a whole the cars were well displayed, though a few tried to crowd all their models into one space.

The decorations were simple, and served to cover the bareness of the concrete walls and set off the cars rather than attract attention to the decorations. The sidewalls, posts and beams were covered with foliage, and all corners were filled with palms, ferns or small fountains.

Exhibits Fenced Off

One point that deserves mention is that each exhibit was clearly marked from its neighbors by a white hurdle, and was designated by a readable black and white sign carried on a simple white framework. The hurdles were only about 30 in. high, and 6 ft. long, and hence could not obstruct the view.

Cadillac and Dodge doubtless had the best exhibits. But they were in their own show rooms on the ground floor, and hence had the preferred location. Marmon and Hudson came next. Marmon because it started with an uncrowded exhibit, arranged the cars so that they could be seen, and then added a few decorations of their own. These decorations were simple—just a willow-work table, three willow work chairs, reading lamp and a few rugs. The place looked like home to the ladies, tired of tramping around, and the ladies are the ones that buy the cars. The Hudson exhibit was arranged and treated in much the same manner, but did not stand out as well, due to its location in the central aisle.

A Dealers' Show

The show was a dealers' show. Indianapolis is a center for about 6000 dealers, and it was estimated that 2500 of them attended the show. Though many of them did attend the Chicago show, it was to Indianapolis that they came to sign their contracts. To a smaller extent it was a buyers' show, many of the special show jobs being sold during the first two days.

The free ticket situation was well handled because a definite policy was formulated and maintained. Post cards were sent to the sub-dealers entitling each to one, and only one season ticket.

Upon presentation of these cards at the managers office, one season ticket was issued, providing the presentor could identify himself as the one to whom the card was sent. If the sub-dealer was in partnership with another, only one received a season ticket. The other must either pay his way in, or take the matter up with the Indianapolis dealer.

Plenty of Advertising

Nearly as much was spent on advertising the show as was spent on decorations, $3,000 being spent on the former, and $4,000 on the latter. Every possible medium was used, billboards, newspapers, posters and cards in store windows and railroad stations. Banners were



The new Dodge and Cadillac Indianapolis plant which was given for the use of the 1917 show. It afforded 40,000 sq. ft. of floor space on the four floors occupied. Its modern equipment and accessibility helped to make the show the best yet

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suspended in the main streets, and a popular moving picture house ran pictures of the previous shows, and of the present show building. Everything was done to emphasize the fact that the coming show was to be staged in a warm building near the center of the city.

A feature that appealed to the senses of spectators was an orchestra on each floor.

Everybody Smoked

One thing, however, was bad. Everybody smoked—dealer, salesman, prospect and visitor. The whole thing was started on account of a little laxity on the first day, while the exhibits were being arranged. When the show opened, nobody stopped, then the visitors took it up, and finally every one but the ladies was smoking. Next year the management will strictly enforce the no smoking rule from the start.

As Cadillac and Dodge will immediately move into the present show building after the show, Indianapolis will again have to face the exhibition building problem. Steps have already been taken by the association for the purchase of land and the erection of a coliseum for the show.

The show was directed by John B. Orman, who has done this for the past ten years. B. M. Wylie is president of the association, and R. V. Law, E. W. Steinhart and Wm. B. Peterson are the show committee.

Pulling an Organization Out of the Mud

How One Illinois Dealer Has Climbed to a Firm Foundation Through Employes' Conferences

EVERY winter the Illinois automobile trade gets stuck in the mud. The Marmon-Buick Sales Co., distributers of the Buick and Marmon through Champaign County and east central Illinois, are located in Urbana, the heart of the mud district. They have pulled out of the mud by doing two things. One was to get their patrons to bring their cars in and have them overhauled for the coming season. The other was to form a night school for their organization and study and teach each other in the things they ought to know.

The service manager, H. A. Amerman, knows that the company is a selling organization—selling cars and selling service. He knows that the company is only a success when it sells satisfaction to its customers at a fair profit to itself. So he formed a night school, composed of the employees, that meets every Monday night and talks over every phase of the business. Here is his statement of the policy of the school:

Employees Must Talk Intelligently

"Every employee is expected to become thoroughly familiar with our terms of sale on all lines of goods we handle in order that they may talk intelligently to any customer. This instruction is accomplished through the medium of a 'Planning Department,' which meets weekly, of evenings and outside of business hours. Any one accepting a position must agree to give one evening a week of his time for this meeting. In return for this time the meetings are made broadly instructive enough that every one attending will gain knowledge of the business that will increase individual earning capacity and fit them for better positions in our firm or elsewhere."

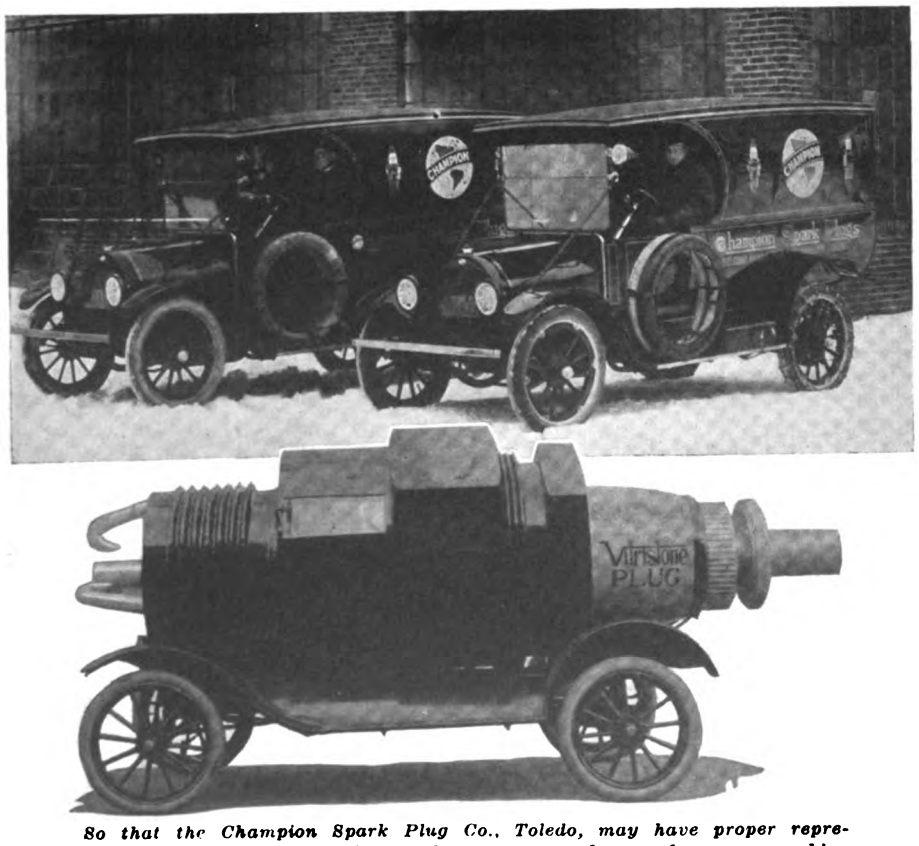
The meetings are held in some one of the employees homes, and are informal. A definite schedule is followed. Batteries one week, Lighting and Starting Systems the next week, Car Values and Selling Points another week, so that every angle of the business is covered.

The men themselves are the teachers, each week the one best able to handle the subject preparing a paper, presenting it, and all discussing it at the close.

As a result, "Bill," the mechanic, knows the selling points of the cars, the terms of sale, and can judge second hand car values. A few words from him to the prospect often bear more weight than a 2-day talk from the salesman—and his statements, agreeing with the words of the salesman, clinch the argument. On the other hand, the bookkeeper knows how long it will take to fix a broken differential—and can often suggest ways of preventing another break. Co-operation is the result.

The home of the Marmon-Buick Sales Co. is not much to look at—its double may be found in almost any town in the country. It is a long, low brick building, close to the street, and half hidden behind a billboard. At the front are the offices, the accessory store and the garage, at the rear is the repair-shop. The accessories carried are chosen for the Marmon, or for the Buick, and are chosen to sell. The equipment of the repairshop is duplicated in nearly every repairshop in the country. But it does possess a personality that is the result of organization, study and work.

ADVERTISING TWO PLUGS ON THE ROAD



So that the Champion Spark Plug Co., Toledo, may have proper representation at the Coast shows, the two cars shown above are making the rounds of them. The Emil Grossman Mfg. Corp., New York, designed the car shown below and it is one of a fleet of twelve; it is 14 feet long

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Should Old Acquaintance Be Forgot

(*Continued from page* 15)

houpt has for a long time been in the real estate business.

W. A. Hungerford, Austin, Minn., is a young fellow in the motor car business. He is handling the Velie his second year. His father is an old hardware man in that section.

G. R. Bradley used to be city treasurer of Mankato, but decided it would be better to count money for himself, so two years ago he took the King and Dort agencies and now handles the Dort and Velie as the Mankato Motor Sales Co.

Ben Finnegan, Mandan, N. D., used to work in Peoria, Ill., but five years ago went into the car field and two years ago took the Reo agency and also secured the Maxwell. Last year he sold 83 Reos and 76 Maxwells. He has just contracted for 100 Velies. He also handles the Buick.

William E. Lyman handles the Velie in Hibbing, on "the range." He has sold cars two years. Before that he ran a real estate business, operated a cafe and is said to have been one of the biggest slot machine men in this part of the world.

Michael Bisenius, St. Cloud, used to be a farmer, but six years ago entered the motor car business. He used to sell the Maxwell—125 a year—but now has the Velie only. He sold 52 last year. He has quite a group of dealers and is storing cars this winter.

Charles M. Stucker, who is now sales manager for the R. C. Smith Automobile Co., Minneapolis, used to be an engineer in the Northwest for the United States Steel Co. Then he was manager of the automobile department of the Deere & Weber implement house, Minneapolis, and later became a Velie rambler in the Northwest, stepping from that to his present connection with Smith, who handles the Velie.

Thomas Tilghman has sold the Velie in Canby, Minn., for three years. He was and still is an implement man and banker.

E. L. Hedley, who operates the Hedley Automobile Co. in Watertown, S. D., has just a bit of Western dash in his make-up. He made $150,000 in land in two years and lost it all. Then, five years ago, he took the Overland, Ford and Oakland agencies and has made up a lot of what he lost. He is one of the biggest distributers in his state. He now handles the Velie and Ford. He is an Englishman of a very methodical, business-like character.

The Peterson Brothers, Hutchinson, Minn., have sold cars three years. Last year they got rid of 28 Velies and quite a number of Dorts. They are stocking cars this winter.

Charles R. Gardner is another Northwestern rambler. He represents the Velie. He was once Omaha manager of the automobile department of the Deere plow company and has been with Velie seven years. He graduated from the implement end of the business.

Harry E. Pence doesn't need much description. His story appeared recently in Motor World. Pence is now in Florida reading about the zero weather in Minneapolis and the Pence Automobile Co. sells Buicks just the same. He was a lumber merchant until he went into cars along about 1903. He is president of the dealers' association.

J. P. Snyder, who sells the Premier in Minneapolis, entered the car business 5 years ago with a garage on Tenth Street. First he had the Fiat, then the Stevens-Duryea, and has had his ups and downs, but is now making money. He is a grandson of Pillsbury, of flour fame.

A. M. Welch is another rambler—now for the Marmon. He goes everywhere. Welch began back in 1897 when the Electric Vehicle Co. used to put a car together and then hold its breath while the tester threw the lever to see if the thing would run. Welch went through all stages of the electric industry. He was with the General Vehicle Co. in Brooklyn, N. Y., until 1902, when he went with Studebaker, remaining eight years. Later he was commercial car manager for Franklin until that company quit the commercial car business; then he went with Stevens-Duryea and stayed until that company quit business, since when he has been a territorial manager for Marmon. He owns a home in Brooklyn and calls there once in a while.

C. R. Reilly, of the Reilly-Herz Co., Minneapolis, is not related to Cornelius J. Reilly, of Callawassa. His company now sells the Elgin. Reilly used to be with Velie in various connections and originally hailed from Illinois. G. H. Herz, who formed the Reilly-Herz Co. with Reilly, has retired and gone to Duluth, being succeeded by E. D. Best.

A. Gaird and **C. H. Taulker** are Gaird & Taulker, of Huron, S. D. They used to sell the Reo, but now have the Elgin. Taulker used to sell grain binders in South Dakota.

Hahn & Jones are moving from Humboldt, S. D., to Sioux Falls and will handle the Elgin in a quarter of the state. They have been bankers in Humboldt, have handled the Dodge and Reo and are moving to get into a city that is more of a center. Probably every one who reads this thinks Jones' name is Jones. It isn't. Every man has a right to call himself what he will and Jones pronounces his name "Jone-us."

John Roberton and **John Hamilton,** Grand Forks, are a couple of young fellows who used to be with the Henry Motor Co., which handles the Oakland in Grand Forks. A year ago they set up for themselves as the Elgin Automobile Co. and are handling the Elgin, which seems to be making progress in this territory. They took 20 cars in January, are now taking their February specifications and have contracts for 165 cars from their dealers.

W. C. Miller, who is moving from West Salem, Wis., to La Crosse, used to be an implement man until he took the Dodge and Buick in West Salem. Now he is moving to a bigger town to handle the Elgin. He is taking 50 cars.

John E. Fawkes, who handles the Olds in Minneapolis, has never done much except sell cars. He isn't very old in years, and gets his car selling instincts from his father, Leslie H. Fawkes, who is one of the motor pioneers of the Northwest.

Leslie H. Fawkes handles the Reo and Stutz in Minneapolis. He came up from the bicycle days and has had considerable properity thrust at him through real estate holdings. Like many another, his entry into cars was from the Rambler bicycle to the Rambler car. He is rated as one of the Northwest's best salesmen.

W. C. Upton started a year ago in Minot, N. D., which is the central city for northwest North Dakota. He has the Olds and used to travel for a harvester company. He ordered 33 cars in December and hasn't got them all yet.

Frederick E. Murphy is the F. E. Murphy Automobile Co., Minneapolis, which distributes the Paige and Mitchell. He has been selling cars six years and has one of the finest salesrooms in the world. Before taking up with cars he was advertising and circulation manager for the Minneapolis Tribune, which his brother owns. He has another brother, Joe, who is the automobile man on the St. Paul Dispatch. Fred is secretary of the dealers' association.

Harvey Mack, Minneapolis, started as the Dodge dealer about a year ago. Before that he was with the Packard company in a managerial capacity.

Dan Odell, who sells Pierce-Arrows in Minneapolis, used to be a banker in southern Minnesota, from whence he went to Minneapolis to buy out the Pierce dealer.

Harry E. Wilcox, one of the leaders in the Minneapolis Automobile Trade Association, makes the Wilcox truck. He is one of the trade's pioneers. Years ago he bought a car and did his own repairing. He was in the lumber business and had a small machine shop. So good was he at repairing that he had a lot of repair work thrust at him whether he wanted it or not, and then he built a few cars and trucks, but later dropped the car and concentrated on the truck.

William E. Wheeler, who sells the Saxon, Jordan and Woods electric in Minneapolis, is an old bicycle man and was one of the first dealers in Minneapolis. He has been here so long no one remembers when he began. He is a director of the dealers' association.

John Graham, Studebaker branch manager in Minneapolis, is one of the best wholesale organization men in the Northwest. He used to be Studebaker manager in Fargo and was so good he was moved to the bigger city.

O. M. Gray, who retails the Studebaker in Minneapolis as the Gray Motor Co., hails from Kansas City, where he was in the buggy business. He then became a car salesman and several years ago went to Minneapolis as city sales manager. Later he was given the retail agency. He is an A-1 salesman and sales manager.

Bert E. Stimson, who manages in Minneapolis for the Chevrolet, is rated as one of the keenest business men in the Northwest. He is an old Briscoe man.

Johnnie Johnson, who handles the Standard Eight in Minneapolis, is so well known as Johnnie that few know his right name is John S. He does business as the Johnnie Johnson Motors Corp. Until he formed this corporation a few months ago he was Winton branch manager in Minneapolis and had been with Winton 12 years. He used to be mechanician for Kaiser of early racing fame, and it was once said: "We could beat that Kaiser if somebody would take that Swede mechanician away from him." Before his car career began he was a champion skater and bicycle rider. In 1894 or 1895 he took the world's skating championship from Joe Donahue and in 1893, at the Chicago World's Fair, took the 5-mile world's championship bicycle record from Arthur A. Zimmerman. For two years he and Kaiser never lost a heat with the old Winton Bullet.

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Prominent Tradesmen Assume New Duties

Resignations and Promotions Place Workers in New Places

Henry F. Campbell has resigned as secretary-treasurer of the Stutz Motor Car Co., Indianapolis. He will retain his stock interest in the company of which he was a founder. He will devote his time to private interests.

William B. Thompson has been appointed secretary-treasurer of the Stutz Motor Car Co., Indianapolis. He was formerly sales manager of the company.

John C. Jay, Jr., has resigned the vice-presidency of the Maxwell Motor Co.

F. W. Boynton has been appointed purchasing manager of the Packard company. He has been with the company 9 years.

R. M. Anderson has been appointed research engineer of the Packard Motor Car Co., Detroit. Frank Wahl has been named as his assistant.

William H. Bennett has joined the advertising staff of the Service Motor Supply Co., Chicago. He was formerly advertising manager of the Searchlight Co., Chicago, which has been consolidated with the Air Reduction Co. of New York.

Albert H. Woods, for 5 years with the American Locomotive Co., Providence, R. I., has joined the truck sales department of the Van Cortlandt Vehicle Corp., New York, metropolitan distributer for Peerless cars and trucks.

Carroll W. Prochaska, formerly president of the Whalen Eng. Co., New York, distributer for the F. A. C. carbureter and Alisco shock absorber, has connected himself with the Holt-Welles Co., Inc., New York City. He will be assistant sales manager.

Claude C. Ostrom has resigned as purchasing agent of the Locomobile Co. of America, Bridgeport, and will become associated in an executive capacity with the Parish Mfg. Co., Reading and Detroit. J. E. Forgy, assistant purchasing agent, succeeds Ostrom, February 15.

Jerome T. Potter has been appointed manager of retail sales in the Bronx, N. Y., territory for Willys-Overland, Inc. He was formerly in the retail sales department in the main office.

W. H. Lumpkin has been appointed advertising manager of the Silvex Co., South Bethlehem, Pa.

R. S. Wilson, who has been in charge of the Service Department of the Goodyear Tire & Rubber Co., has assumed the duties of manager of the Motor Truck Fire Department.

G. E. Brunner, who has been assistant to R. S. Wilson in the service department of the Goodyear Tire & Rubber Co., has been advanced to the position of manager of the department.

W. R. Bliss, formerly of the Goodyear Tire & Rubber Co.'s Boston branch, is now manager of the New York district.

D. M. Colwell, who has been manager of the Southern District of the Goodyear Tire & Rubber Co., becomes assistant manager of the New York district.

B. S. Waterman, assistant manager of the New England district of the Goodyear Tire & Rubber Co., assumes the management of the Boston branch and will continue to look after the company's manufacturers' business in the New England district.

Frank R. Carroll has been made Pacific Coast manager of the Los Angeles branch of the B. F. Goodrich Co., with headquarters in San Francisco. He succeeds C. E. Cook who returns to the home office.

H. M. Applegate will have charge of advertising for the American Motors Corp., Plainfield, N. J.

C. W. Martin, Jr., takes charge of the southern district, with headquarters at Atlanta, for the Goodyear Tire & Rubber Co. He served 5 years as manager of the motor truck tire department.

E. H. McCarty has been named to succeed L. E. McKenzie as assistant Northwest manager of the Studebaker Corp., with headquarters in Portland.

W. A. Bryan, formerly superintendent of the Akron motor truck plant of the International Harvester Corp., has joined the factory executive force of the Firestone Tire & Rubber Co. He fills the recently created position of master mechanic with the latter concern.

Gould Allen who was formerly sales manager of the Colbert Gear Co. of Lockport, N. Y., has been appointed to the sales staff of the Republic Motor Truck Co., Alma, Mich., and will reside permanently on the Pacific Coast.

O. E. Stoll who has been in Philadelphia for 3 years as manager of the General Motor Truck Co.'s branch has been appointed sales manager of the company. He succeeds W. K. Chilcott.

T. P. Myers, sales manager of the General Engineering Co., Detroit, has been elected a director.

H. L. Innes whose resignation from Dodge Brothers, was recently reported, has joined the Chevrolet Motor Co. as factory manager.

S. A. Strickland has resigned as mechanical and sales engineer of the Bantam Anti-Friction Co., Detroit.

C. E. Allen, who has been the superintendent of the C. M. Hall Lamp Co., Detroit, will manage the factory at Kenosha which the company now operates following its purchase from the Badger Brass Mfg. Co.

W. K. Chilcott has resigned as sales manager of the General Motors Truck Co. to accept a position with the Nash Motors Co., Kenosha. He will have charge of the sales of the Northwest division of the United States.

T. S. Gamble, assistant sales manager of the Maxwell Motor Co., Detroit, Inc., has resigned. He will join an advertising company and have headquarters at Cleveland.

W. B. Cochrane has joined the General Motors Truck Co., Pontiac, and will be in charge of Pacific Coast business.

F. R. Carroll has been appointed district manager in Los Angeles, for the B. F. Goodrich Co. He has been in charge of the branch in this city.

C. Earl Dawson who has been the wholesale supervisor for the Chevrolet Motor Co., at Flint, is again in Detroit in the position he formerly held of factory branch manager for that company.

C. F. Loomis, Peoria, of late with the Peoria Tractor Co., has been appointed manager of the newly organized Economy Device Co., which will manufacture and sell kerosene attachments for Ford cars.

W. H. Crowley has been made district sales manager by the American Motors Corp., Plainfield, N. J. He will cover New York and Pennsylvania.

Charles W. Govan has been made district sales manager for New England and Long Island by the American Motors Corp., Plainfield, N. J.

No Saturation Point For Years in America

Manager Henry Krohn Tells Paige Dealers There Are 14,000,000 Buyers Yet in the U. S. A.

MINNEAPOLIS, Feb. 8—There is no such thing as a saturation point for men of the present generation, stated Sales Manager Henry Krohn of the Paige company at a dinner of western Paige dealers held here to-night.

"There are," he said, "3,000,000 cars owned in this country, but three different statisticians who have figured on this for us find that they are owned by 600,000 people. Some companies own large numbers of cars.

"There are 13,000,000 or 14,000,000 people to-day who can afford to buy cars, and when these figures are compared with the annual production it makes the saturation point look very distant. We also must remember that 35 to 40 per cent of the buyers buy again next year.

"If, with the industry only about 12 years old, we have only 3,000,000 cars in use, it makes the future very encouraging from a sales standpoint."

Maxwell and Chandler Dealers Meet

SEATTLE, WASH., Feb. 4—With a view of increasing the efficiency of the Seattle Automobile Co., distributor for Maxwell and Chandler cars, a get-together banquet was given by the management to all employees. Among the speakers were H. P. Grant, manager, on "Loyalty and Its Reward"; H. M. Miller, secretary and treasurer, on "System"; O. W. Harris, "Co-operate with the Salesman," and Jack Martin, superintendent, on "Service."

Stiger Names M. & A. M. Committees

NEW YORK, Feb. 8—President C. W. Stiger has announced the following committees of the Motor and Accessory Manufacturers Association to serve for the ensuing year: Executive—President Stiger, chairman; C. E. Thompson, E. H. Broadwell, James H. Foster, W. O. Rutherford, Christian Girl and Alfred P. Sloan. Finance—C. E. Thompson, chairman, together with the members of the executive committee. Show and Allotment—Christian Girl, chairman; C. E. Thompson, E. H. Broadwell, James H. Foster and William C. Rands. Banquet—William M. Sweet, chairman; E. H. Broadwell, T. J. Wetzel, J. H. Foster, Christian Girl. Membership—E. W. Beach, E. H. Broadwell and T. J. Wetzel. Auditing—C. W. Stiger, Alfred P. Sloan, Jr., L. M. Wainwright. Aeronautics—C. W. Stiger, C. E. Thompson and W. M. Sweet.

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Forty Dealers Exhibit 115 Cars at Portland

Thirty-five Makes of Trucks Also on View at Show—50 Per Cent Larger Than Last Year

PORTLAND, Feb. 10—When the curtain lifted on Portland's eighth annual show at the Armory 115 pleasure cars and 35 makes of trucks were in the various booths, with the selling organizations of some 40 Portland automobile firms on the firing line.

The exhibit was fully 50 per cent larger than the show of 1916, although a number of dealers experienced delays in receiving shipments of demonstrators due to railroad troubles. The main room of the Armory was given over to pleasure cars selling for more than $1,000. Cars selling for less than $1,000 were delegated to the second floor, and a special annex was built for the display of trucks.

The show was held under the auspices of the Portland Automobile Dealers Association, and the show committee consisted of A. B. Manley, chairman; H. L. Keats and A. G. Rushlight, with Joseph M. Rieg, who has successfully guided the destinies of previous shows, manager, assisted by M. O. Wilkins, president of the association.

Special rates were granted to show visitors by all railway and steamboat companies, and a large number of both Oregon and Washington dealers were in attendance. Among those in attendance were: James Robertson and W. M. Buck, of the Dort factory; E. M. Cox, of Seattle, Northwest distributer for Grant cars; W. S. Dulmage, Chevrolet dealer in Seattle and Tacoma; M. L. Gallagher, of Spokane; "Dad" Allen, of the Allen General Tire Co., Seattle; Francis Ford, Pacific Truck & Trailer Co., Seattle; Duncan A. Hamilton, secretary Automobile Association of British Columbia; Charles L. Harris, of Victoria, secretary of Island Automobile Association.

At the present time there are more than 33,000 automobiles in the State of Oregon, one for every 25 persons. Dealers generally expressed themselves as well pleased with results, and agree that 1917 will be the greatest selling year in their history.

Two factors have contributed greatly to business success during the past year, the great increase in the shipbuilding industry, there now being sixteen shipbuilding companies in Oregon, with contracts for the construction of vessels totaling more than $25,000,000, and also the high prices obtained for wheat, thousands of dollars from this source having already found its way into the pocket of the automobile dealer.

Closed Car Show for Dallas

DALLAS, Feb. 10—Dallas dealers are going to have a closed car show at Dallas, March 5, 6 and 7. It will be in connection with the Spring Style Show, and will be on an elaborate scale. The cars will be shown in the lobby of the Oriental Hotel. Herbert Marcus is chairman of the arrangements committee. Every company in the city has signified its intention of entering cars. Many of the cars shown at the New York and Chicago Shows will be shown, and as far as possible the show will be patterned after that in New York City. This is hereafter to be made an annual event.

Columbus Starts Membership Campaign

COLUMBUS, OHIO, Feb. 10—The board of governors of the Ohio Automobile Trade Association at a meeting February 7, approved the membership campaign plans of the special committee named several weeks ago. The special committee consists of J. P. Gordon, chairman; Charles Justus and Harry J. Schwartz. It is planned to send out a number of field men to secure members for the organization by explaining the objects of the organization. The men will start out at once and the active work will start.

Columbus Studebaker Dealer Entertains

COLUMBUS, OHIO, Feb. 10—R. D. Hawley, manager of the Studebaker branch, entertained about 50 of his dealers with a luncheon at the Chittenden Hotel recently. J. C. Hahn, treasurer of the Studebaker Sales Co., and C. E. Dean, general sales manager, gave talks on the freight car situation.

Olympian Gets Cartercar Plant

DETROIT, Feb. 10—The Olympian Motors Co., Pontiac, has purchased the plant of the former Cartercar Co. and will take possession April 1. The acquisition includes five buildings giving 225,000 sq. ft. of floor space and several storage sheds and other buildings. In addition, the company has purchased 15 acres of land adjoining the factory and plans to erect a modern one-story assembling plant 800 x 100.

Eastern Moves to New Britain

NEW BRITAIN, CONN., Feb. 9—The Eastern Motors, Inc., has removed its offices from Hartford to its factory here.

Philadelphia Dealers' Dinner Saturday Night

Automobile Trade Association Will Invite Guests to Annual Banquet at Bellevue-Stratford

PHILADELPHIA, Feb. 11—The annual dinner of the Philadelphia Automobile Trade Association will be held on Saturday evening, Feb. 17, on the roof of the Bellevue Stratford. J. H. Fassitt, president of the association, has appointed, as an entertainment committee, the following members: T. S. Johnston, T. S. Johnston & Co., Inc., chairman; W. Ross Walton, branch manager of the Firestone Tire & Rubber Co.; W. H. Metcalf, branch manager of the Houk Wire Wheel Co., and J. E. Gomery, of the Gomery-Schwartz Motor Car Co. The committee has already sent out invitations to the entire membership of the association, and from present indications the attendance will be large. Due to a great many requests that guests be permitted, the committee has decided to give all members the opportunity of inviting their friends.

Victor Rubber Doubles Plant

SPRINGFIELD, Ohio, Feb. 10—The Victor Rubber Co. has awarded a contract for additions to its factory which will double the floor space. At the annual meeting of the stockholders, the following board of directors was elected: President, H. H. Durr; treasurer and general manager, F. R. Talbott; secretary, Arthur Sackett; vice-president, H. J. Robben; assistant general manager, C. A. Swinehart; Ben Johnson, John L. Bushnell. The plant has been in continuous operation, night and day, for over two years.

New Coast Accessory Jobber

SAN FRANCISCO, Feb. 10—W. Davis & Sons, 333 Market Street, have entered the automobile field with a line of woolen, plush and kersey robes, steamer rugs, travelers kits, mackinaw and sport coats together with a line of accessories for the trade.

Incorporate Buchan Auto Supply Co.

MANSFIELD, OHIO, Feb. 8—The Buchan Auto Supply Co. has been incorporated for $10,000. G. L. Buchan will be general manager and A. L. Wenz sales manager.

Ford to Build 250,000 Trucks

DETROIT, Feb. 5—It is reported that the Ford Motor Co. will place its truck on the market by April 1, and that material to manufacture 250,000 of these trucks has been contracted for.

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March Again President of Milwaukee Dealers

Organization Re-elects All Officers—Osmond and Browne Added to Board of Directors

MILWAUKEE, Feb. 10—Alton J. March, president of the Curtis Auto Co., Milwaukee, Reo distributer, and all of the other officers of the Milwaukee Automobile Dealers, Inc., were re-elected at the annual meeting of the association on Thursday night, February 8, at the Hotel Wisconsin. The other officers are: Vice-president, John G. Wolleager, president of the John G. Wolleager Co., Studebaker and Peerless distributer; secretary, Herbert W. Bonnell, manager, Mitchell Automobile Co.; treasurer, Jesse A. Smith, president of the Jesse A. Smith Auto Co., Hudson distributer.

To make the number of directors proportionate with the increased membership of the association, which now has grown to 45 members, it was voted to increase the directorate from 7 to 9 members. Ray C. Chidester, Packard distributer; Leslie D. Frint, Chevrolet and Monroe distributer, and Frank J. Edwards, head of the Kisselkar Co. and the Edwards Motor Car Co., Dodge distributer, were re-elected. The new directors are: N. E. Osmond, of the Osmond-Vogel Co., Jeffery distributer, and George W. Browne, Overland and Willys-Knight distributer.

The annual meeting was preceded by a banquet in the Colonial room of the Hotel Wisconsin.

Reports of the officers showed that the ninth annual Milwaukee show, held in the Auditorium from January 5 to 11, inclusive, was by far the most successful, financially and otherwise, in the history of the Milwaukee dealers. No figures are available, but it is known that a handsome sum was re-distributed to members, still leaving a neat profit to the treasury. The shows always have been operated on the co-operative plan, and the surplus is divided between the members and the treasury. This plan has resulted in an almost even balance of the expense of the members for space at the show.

It was decided to again conduct a spring show late in April, dates to be selected later, when the show committee appointments are completed by President March. This will again take the form of a circuit-exposition, in which each member will hold a special display in his salesrooms at the same time, to be transported from one salesroom to another free of charge by means of a squadron of demonstrators furnished by each exhibitor. These shows are timed to come at the beginning of the real motoring season and are a "round-up" of prospects made at the winter show and nursed along since that time until spring weather brings on the "buying fever."

The third annual fall show, held in connection with the Wisconsin State Fair at the state fair park in West Allis, a suburb of Milwaukee, will be held September 9 to 15, inclusive. The M. A. D. again has succeeded in obtaining an exclusive lease on the big Machinery Hall, now known as Motor Hall, which permits of an exposition of nearly the same magnitude as the Auditorium, which is used for the winter show. The board of state fair managers co-operates with the M. A. D. in every way, and again has appointed Bart J. Ruddle, assistant secretary and manager of the association, and directors of all Milwaukee shows, as superintendent of motor cars.

The Milwaukee dealers this year also are "silent partners" in a show circuit throughout Wisconsin. They have lent Ruddle's services to local dealers' associations in such cities as Madison, Wausau, Green Bay, Manitowoc, Sheboygan and other important population centers.

Racine Schedules Show Feb. 15-18

RACINE, WIS., Feb. 12—The fifth annual show of the Racine (Wis.) Automobile Show Association will be held from Feb. 15 to 18 in the Lakeside Auditorium under the management of Charles A. Myers, who has conducted all of the previous expositions. Representatives of 26 makes of cars have taken space and 42 models will be displayed.

To Make 2800 Happy Farmers

LACROSSE, WIS., Feb. 12—To make possible a production of at least 2800 Happy Farmer tractors during the calendar year, the LaCrosse Tractor Co., the recent consolidation of the Sta-Rite Engine Co., LaCrosse, and the Happy Farmer Tractor Co., Minneapolis, Minn., has leased the former plant of the Summit Stove Works at LaCrosse and will use it to handle the overflow from the main plant in that city. The company started out to manufacture about 1500 tractors this year, but up to February 1 has booked orders for 2800, which has now been determined as the maximum production to be undertaken.

Belmore to Make Six and Four

TOLEDO, Feb. 8—The Belmore Motor Car Co., of this city, will shortly produce a series of light six and four-cylinder motor cars. The line will include a five-passenger Riviera model touring, four-passenger Chevy Chase model club, two-passenger Daytona racy roadster, a touring sedan, coupé and an all weather top in the closed type.

Two New Bethlehem Trucks on the Market

One Has 1¼ Tons Capacity, the Other 2¼—Company Plans to Produce 10,000 This Year

ALLENTOWN, PA., Feb. 12—Two truck models have been placed on the market by the Bethlehem Motors Corp., one 1¼-ton and the other 2¼-ton capacity. This concern, which has only been organized a few months, plans a production of 10,000 during the year. They are of conventional design assembled from standard components and will be produced both as stripped chassis and in several standard body types.

BETHLEHEM SPECIFICATIONS

Capacity, lbs.	2,500	4,500
Price	$1,125	$1,665
Wheelbase, in.	126	144
Tires, front	34 x 3	34 x 4
rear	34 x 4	34 x 6
Bore, in.	3¾	4
Stroke, in.	4¼	4½
N.A.C.C. hp.	22.5	25.6
Final drive	internal gear	

A Lycoming engine is used on the smaller model and a North American on the larger, both being incorporated in unit with their clutches and gearsets suspended at three points from the main frame. The smaller engine is block-cast and the larger in pairs.

Thermo-syphon water circulation through long-square-tubular, sheet-metal-cased radiators is employed on both models and both have Bosch single magneto ignition with hand spark advance. They are not provided with governors. Gravity feed is used for the fuel line.

Both models drive through dry-disk clutches and three-speed selective gearsets made by the Detroit Machine Co., to Russel internal-gear rear axles, from which torque and propulsion are taken by the Sheldon springs.

There are sloping hoods over the engines, with louvres and merged with cowl dashes. The cab also blends with the dash on each model and has a door of the swinging type. The door is regularly painted a different color from the rest of the vehicle. Extension bow tops are fitted at extra cost. Standard control with central levers and the steering wheel to the left are employed.

Baltimore Service Station for Remy

BALTIMORE, Feb. 12—The Remy Electric Co. has established a new service station which will be maintained by Reus Bros. C. F. Wolfe has been transferred from the Buffalo Service Station to the New Orleans Service Station.

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Would Exempt Trucks From Personal Taxes

Two Bills Introduced to Take the Sting Out of New Hewitt Law Multiplying Truck Fees

NEW YORK, Feb. 13—Owners and operators of motor trucks may not have to pay fees from double to fourteen times those of 1916 after all. Following the passage of the Hewitt-Wells Bill, Governor Whitman granted a hearing on these measures February 6 and a large number of owners and operators of trucks, truck dealers and the various dealer and owner organizations in New York, appeared. In consequence, two bills have been introduced in the Senate and the Assembly respectively, providing for a commission to investigate and make a scientific report as to what shall constitute an equitable registration fee for a commercial vehicle. The commission will consist of a road engineer, a state engineer, and a motor truck engineer and will report to the legislature. It is confidently expected that these bills will be passed because of the favorable attitude of Governor Whitman.

Another bill of equal importance introduced by Senator Slater provides for the exemption of motor trucks and buses from local and general taxation in lieu of the present increased fees provided for by the Hewitt-Wells bills. If this measure passes, personal property and local taxes will be eliminated and these in most cases are greater than the present registration fee.

Nominate Waldon S. A. E. Chairman

DETROIT, Feb. 8—S. D. Waldon, formerly connected with the Cadillac Motor Car Co. and vice-president of the Packard Motor Car Co. in charge of engineering, yesterday received the nomination for chairman of the Detroit section of the Society of Automobile Engineers. C. C. Hinckly, chief engineer of the Chalmers Motor Car Co., was nominated vice-chairman; G. M. Holley of Holley Bros. for treasurer; W. B. Stout, aircraft-motor engineer of the Packard Motor Car Co., for secretary; and L. D. Bollon, president of the Ainsworth Mfg. Co., for section member of the National Nominating Committee.

To Supply Abbott and Marion Parts

NEW YORK, Feb. 12—The Automobile Mechanics Corp. has bought the Abbott-Detroit Parts Corp., and the Marion Auto Service Co. and is prepared to furnish parts for old models. It also carries a stock of Pullman parts and does the service work for the Elcar for this territory. The company, which does an extensive repair business, has taken new quarters at 221 West Fifty-third Street, New York.

Ford Buys Steel for Cork Plant

DETROIT, Feb. 8—The Ford Motor Co. has contracted with the American Bridge Co. for 20,000 tons of fabricated steel to be used by a manufacturing and assembling plant which will be located in Cork, Ireland, and will serve the British trade. The company has also ordered about 200,000 of various materials from the United States Steel Corp. mills to be delivered by the middle of next year. This includes sheets, bars, tubes, wire and other products, and is expected to cover the company's manufacturing program in the United States.

Mitchell Earns $1,188,397

RACINE, WIS., Feb. 10—The Mitchell Motors Co. has issued its first annual report for the year ended Oct. 31, 1916, showing net earnings after interest, taxes and organization expenses of $1,188,397. This is equal to $9.73 per share on the 125,000 shares of stock outstanding, of no par value.

Price Sells Overland Business

CHICAGO, Feb. 10—Charles W. Price has retired as distributor of Overlands in Chicago and surrounding territory, and Willys-Overland, Inc., Toledo, has purchased his interest in his company, the Overland Motor Co. Price's retirement has been caused by ill health and outside financial interests. Joseph H. McDuffee, assistant sales manager at the Overland plant, has been placed in charge of the Chicago business. Price's future plans have not been announced.

Motor Car Security Quotations

	Feb. 10, 1917 Bid	Asked
Ajax Rubber Co.	69	71
J. I. Case T M Co., pfd.	82	85
Chalmers Motor Co. com.	25	30
Chalmers Motor Co. pfd.	—	—
*Chandler Motor Car Co.	95½	97
Chevrolet Motor Co.	95	100
Fisher Body Corp. com.	35	40
Fisher Body Corp. pfd.	90	95
Fisk Rubber Co. com.	60	80
Fisk Rubber Co., 1st pfd.	101	105
Fisk Rubber Co., 2nd pfd.	95	102
Firestone Tire & Rubber Co. com.	140	144
Firestone Tire & Rubber Co. pfd.	108	109
*General Motors Co. com.	104½	106
*General Motors Co. pfd.	88	89
*B. F. Goodrich Co. com.	55	55⅞
*B. F. Goodrich Co. pfd.	109½	110⅛
Goodyear Tire & Rubber Co. com.	270	275..
Goodyear Tire & Rubber Co. pfd.	107	108
Grant Motor Car Corp.	6	8
Hupp Motor Car Corp. com.	4	5
Hupp Motor Car Corp. pfd.	—	—
International Motor Co. com.	15	19
International Motor Co. 1st pfd.	—	70
International Motor Co. 2nd pfd.	20	30
*Kelly-Springfield Tire Co. com.	51	53
*Kelly-Springfield Tire Co. 1st pfd	88	95
*Lee Rubber & Tire Corp.	20½	22
*Maxwell Motor Co. com.	51	52
*Maxwell Motor Co. 1st pfd.	66¼	66¾
*Maxwell Motor Co. 2nd pfd.	34	35
Miller Rubber Co. com.	245	253
Miller Rubber Co. pfd.	105¾	106¾
Packard Motor Car Co. com.	—	154
Packard Motor Car Co. pfd.	—	102
Paige-Detroit Motor Car Co.	38	39
Peerless Truck & Motor Corp.	16	18
Portage Rubber Co. com.	162	167
Portage Rubber Co. pfd.	—	—
Regal Motor Car Co. pfd.	27	35
†Reo Motor Car Co.	34½	35
Saxon Motor Car Corp.	47	48¾
Springfield Body Corp. com.	70	80
Springfield Body Corp. pfd.	110	120
Standard Motor Construction Co.	5½	6½
Stewart Warner Speed Corp. com.	85½	86½
*Studebaker Corp. com.	102½	103
*Studebaker Corp. pfd.	107	108½
Swinehart Tire & Rubber Co.	80	85
United Motors Corp.	38½	39
*U. S. Rubber Co. com.	52	52⅝
*U. S. Rubber Co. pfd.	106⅛	107
White Motor Co.	47	48
*Willys-Overland Co. com.	31¾	32
*Willys-Overland Co. pfd.	94	95

*At close, Feb. 10. Listed N. Y. Stock Exchange. †Par value, $10; others, $100.

Propose National Body For Service Managers

Sentiment for Such an Organization Develops at Indiana Meeting—Cleveland to Organize

INDIANAPOLIS, Feb. 13—A national association of service managers is in the air. At the regular monthly meeting of the Indiana Service Managers' Association, held at the Hotel Severin last week, such an association was proposed in a tentative way. It was also revealed that general manager Alfred Reeves of the National Automobile Chamber of Commerce is endeavoring to organize in Cleveland a service managers' association similar to the Indiana body.

About 25 service and purchasing department managers were present at the meeting, and discussed the various problems peculiar to their respective departments. D. S. Ritter, of Nordyke & Marmon, presented a paper on the relation between the purchasing department and the service department. P. W. Tracy led the discussion which was thorough.

The association is planning to protest to the N. A. C. C. regarding the National Service Policy adopted by that body. J. C. Thorpe of Urbana pointed out that the policy is not as fair to dealers as might be desired.

Ford Starts Jersey Plant

KEARNY, N. J., Feb. 13—The Ford Motor Co. has started construction of its plant on the New Jersey meadows adjacent to Kearny, where 80 acres of ground have been purchased. It is expected that the structure, which will be four stories, will be completed in about a year. It is stated that this location will afford better transportation facilities than the Long Island City plant, which has been inadequate to supply the demand for domestic and foreign trade.

Fageol Issues Beautiful Catalog

The Fageol Motors Co., Oakland, has issued a beautifully arranged and printed catalog. It is a case bound book with the front cover printed in gold over all with the Fageol characteristic shield impressed in blue, black, gold and red. The interior of the book is captivating. The paper, a sepia dull finish, stipled after printing is done in blue, pink, orange, black and green—the type in black, the leaves by orange chapter headings, the characteristic illustrations being done in the various tones of the colors mentioned. The story is divided into chapters on the car, the motor, the chassis and the coachwork and is beautifully illustrated throughout.

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Los Angeles Celebrates Firestone Dedication

Mayor Attends Opening of New Branch Building—Tire Displays in All Big Stores of the City

LOS ANGELES, CAL., Jan. 31—This was Firestone day in Los Angeles. Dealers from all the territory supplied by the local branch, including California south of the northern line of San Luis Obispo and Kern counties, southern Nevada, northern Mexico and the State of Arizona gathered here to attend the first sales conference and participate in the ceremonies accompanying the dedication of the new $150,000 branch building. There were approximately 700 dealers here.

From the home office at Akron, Ohio, came R. J. Firestone, the vice-president of the company; S. G. Carkhuff, secretary; E. W. Be Saw, Western district manager. E. S. Firestone, manager of the San Francisco branch, was here also. President H. S. Firestone wired his regrets for his inability to be present.

Never before had the city of Los Angeles showed such an open-arm policy toward representatives of an Eastern corporation. The mayor participated in the ceremonies and presented R. J. Firestone with a floral horseshoe as indicative of the city's well wishes. The chief of police took an active part. The president of the Chamber of Commerce was one of the principal speakers. The downtown department stores, exclusive women's shops, milliners and jewelers permitted the display of a Firestone tire in their windows, and 600 tires were used for decorative purposes in the stores, hotels and cafes.

Many of the dealers motored into the city. Delegations from Riverside and Pomona, in one contingent, and those from Santa Barbara in another made the trip in nine cars, each displaying a huge letter on its side and the cars arranged in sequence to spell out the word Firestone. Immediately upon the arrival of the visitors who came by rail they were met at the station by a reception committee and conveyed to a hotel and then to the branch building. The morning hours were devoted to getting acquainted and inspecting the building.

At noon a motor parade was organized and led by an escort of mounted police it proceeded from the branch to the Hotel Alexandria, where luncheon was served. The business session was held in the afternoon at the Little Theater. Company policies, methods and processes were explained by the visiting factory officials and a motion picture depicting factory views shown. The feature of this session was the question box. R. J. Firestone threw down the bars when he told the dealers if they desired to ask any pointed questions to let him hear them. A number of them went right to the front and the discussion that resulted served to give a clearer understanding of his business to every dealer present. Price maintenance was one of the chief topics.

The day's program concluded with a banquet served at the Hotel Alexandria. Plates were laid for 600 guests.

Sterling Will Build Sunbeam Engines

BUFFALO, N. Y., Feb. 8—The American manufacturing rights for the production of Sunbeam engines have been secured by the Sterling Engine Co., of this city. The company hopes to be putting out an American-made twelve-cylinder aeroplane Sunbeam engine by September of this year.

Would Prevent Dealers "Throwing In" Extras

Sturgeon Bay, Wis., Assn. Drawing Up Rules Which Will Assure Standard Prices and Wages

STURGEON BAY, WIS., Feb. 10—The Sturgeon Bay Motor Car Dealers' Association, which is being organized at Sturgeon Bay, Wis., will have as one of its principal objects the discouragement of the practice of dealers to "throw in" extras with car sales. Besides, it intends to see to it that purchasers will pay the price advertised by the factories, and the freight from factories to selling points. Labor in the repairshop also will be standardized as a charge. The association will establish a clearing house, having selected the garage and repairshop of Harry Hocks for the 1917 season, and Hocks will handle all used cars tendered as part payment for new machines.

Wausau Show Dates Feb. 21-24

WAUSAU, WIS., Feb. 12—The Wausau Automobile Dealers' Association has selected the dates of February 21 to 24 for its first annual show, to be held in the grand opera house. In the conduct of this show, the association is being assisted by the Milwaukee Automobile Dealers, Inc., which has loaned the services of Bart J. Ruddle, who has managed the last seven shows put on by the Wilwaukee association. A false floor is being constructed so that the entire main floor of the theater will be on a level with the stage and all of the space used for exhibits. It is planned to show between 17 and 20 different makes of cars —a total of 40 cars on display.



Firestone Dealers Who Gathered a

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Kansas City Show Seen by One Thousand Dealers

Total Estimated Attendance for the Opening Day Was 30,000—Tractor Show in Tent Crowded

KANSAS CITY, Feb. 13—One thousand dealers thronged the Kansas City motor car show opening last night. The attendance for the day was estimated at 30,000. The exhibits included three hundred and twenty-five motor cars and seventy-five trucks.

Seventy-five tractors are being exhibited at a tent show on Union Station Plaza and the exhibition is drawing big crowds of dealers.

The Kansas City Advertising Club entertained various publishers' representatives at a meeting Monday noon. David Beecroft, directing editor of MOTOR WORLD, addressed the gathering.

Harroun Plant Progressing

WAYNE, MICH., Feb. 9—Within 15 days the machine shop and assembly building of the Harroun Motors Corp. factory will be substantially completed. All of the structural work has now been erected for these two buildings, and the work to be done is of a nature that renders progress quite rapid.

Batavia and Simplex in Merger

BATAVIA, N. Y., Feb. 10—The Batavia Rubber Co. and the Simplex Rubber Co. of America, Ossining, N. Y., will merge, and the latter company is to assign all its property, patent rights and agreements to the Batavia company. The Batavia company has for some time contemplated adding solid rubber tires for trucks and also certain classes of mechanical rubber goods. The Simplex Rubber Company has been operating since November, 1916, under patent license rights granted by the Simplex Rubber Co. of Willesden, England. By the merger the Batavia company will increase its capital and will issue stock in the ratio of $85 preferred for each $100 of Simplex preferred and $55 of Batavia common for each $100 of Simplex common. The capital stock of the Simplex company is $100,000 preferred and $200,000 common. The Batavia company is also to assume the outstanding notes of the Simplex company, amounting to about $50,000, and also their current liabilities for materials and supplies, etc.

New Standard Roller Adjustment Offered

PHILADELPHIA, Feb. 8—Creditors of the Standard Roller Bearing Corp. have been asked to settle for 60 cents on the dollar before Feb. 27. This announcement came from the reorganization committee shortly after the stockholders' committee had submitted a report stating that Robinson & Co., New York bankers, would buy out the present 85,700 shares at $7 per share. The former committee reports that the reorganization plan has failed because of the impossibility of securing title to certain patent licenses held by the old company. The present plan is to dispose of the property at a judicial sale, which must be approved by 90 per cent of the creditors, assented to by the stockholders' committee and the stock they represent, and be consummated by Feb. 27.

Traffic Committee Holds Meeting

DETROIT, Feb. 9—The Detroit traffic committee of the National Automobile Chamber of Commerce held its monthly meeting yesterday. New car-service rules as formulated by the railroad and approved by the Interstate commission were submitted to the committee by J. S. Marvin, general traffic manager of the National Automobile Chamber of Commerce, and were discussed. The committee believes that the new rules will be valuable to the industry since they will enforce the home routing of cars. The following officers were elected: Chairman, E. N. Hodges, traffic manager of the Hupp Motor Car Co.; vice-chairman, J. A. Gardner, traffic manager of the Hudson Motor Car Co.; secretary, Hugh Higginbottom, traffic manager of Dodge Brothers.

Fifteen Aeroplane Firms Unite for Preparedness

Represents Investment of $30,000,000—Will Make 175 Machines Weekly If Need Arises

NEW YORK, Feb. 12—Fifteen aeroplane manufacturing companies joined forces for the defense of the United States at a meeting in the Hotel Manhattan yesterday afternoon. The league took the name of the Aeronautic Mfg. Association. The members have a combined investment of $30,000,000 and can turn out 175 aeroplanes weekly if need be.

The firms represented were: International Aircraft Co., Burges Co., Curtis Aeroplane Co., Thomas Morse Aircraft Co., F. H. Flint Engineering Co., United Eastern Aeroplane Co., Gallaudet Co., Brook Aircraft Co., General Aeroplane Co., American Motorplane Co., Aeroplane Company, A. S. Heinrick Corp., Standard Aero Corp., F. F. Pierce Aero Corp., and Benoist Corp.

New Garford Road Builder Truck

LIMA, OHIO, Feb. 10—A new 6-ton model styled road builder has been brought out by the Garford Motor Truck Co. It is for road construction, and while it retains the characteristic Garford steel Roman dash, with the engine between the seats, and final chain drive it differs from all previous Garford trucks in that it has a worm-driven jackshaft.

The truck has a wheelbase of 128 in.; West steel wheels; 40 x 10 in. front and 48 x 20 rear; a steel dump body and a new type of wood hydraulic hoist. The engine is 5 1/10 x 5½.



the Los Angeles Convention, Jan. 31

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Specifications of the Leading Cars

MOTOR WORLD GUIDE

Revisions Are Made in Table Every Week

Model	Motor	S. A. E.	Ignition	Carburetor	Starter	Clutch	Gearset	Wheelbase	Tire	Rims	2-Passenger	5-Passenger	7-Passenger	Coupe	Sedan	Limousine	Detachable Top
ABBOTT																	
6-44	6-3½x4½	25.3	Remy	Stmbg	Remy	DP	3	122	32x4	SS	1195	†1250	1195	1495	1830	....	....
ALLEN																	
Classic	4-3½x5	22.5	Wsths	Stmbg	Wsths	C	3	112	32x3½	SS	850	850	†850	1175	....	....	1195
AMERICAN-SIX																	
A	6-3 x5	21.6	G & D	Zenith	G & D	D	3	122	32x4	SS	....	1285	....	....	....	....	....
AMS-STERLING																	
17	4-3½x4½	15.6	Bosch	Stmbg	Bosch	DP	3	110	30x3½	SS	....	....	....	....	....	....	....
ANDERSON																	
Six-40	6-3½x4½	25.4	Wsths	Own	Wsths	DP	3	120	33x4	SS	1275	1250	*1250	....	....	....	....
APPERSON																	
6-17	6-3½x5	29.4	Remy	Rafid	Bijur	DP	3	130	34x4	SS	1750	....	1750	....	....	....	....
8-17	8-3½x5	31.2	Remy	Rafid	Bijur	DP	3	130	35x4½	SS	2000	....	2000	....	....	....	....
ARBENZ																	
	4-3½x5	16.9	Conn	Carter	Disco	C	3	106	30x3½	C	....	675	....	....	....	....	....
AUBURN																	
6-39	6-3½x5	23.4	Remy	Rafid	Remy	DP	3	120	34x4	SS	1145	1145	†1145	....	....	....	1320
6-44	6-3½x5½	29.4	Deleo	Rafid	Deleo	DP	3	131	35x4½	SS	....	†1535	1535	....	....	....	1785
AUSTIN																	
Hy-King	12-2½x5	39.7	Deleo	Stmbg	Deleo	D	6	142½	34x4½	SS	3750	3750	3750	4550	4950	5250	....
BIDDLE																	
D	4-3½x5½	22.5	Dixie	Zenith	G & D	DP	4	122	32x4	QD	2200	2350	†2275	....	....	3800	3900
BOUR-DAVIS																	
17	6-3½x4½	25.3	G & D	Stmbg	G & D	DP	3	118	32x4	QD	....	1250	....	....	....	....	....
BREWSTER																	
	4-4x5½	25.6	Bosch	Zenith	U. S. L.	C	3	125	34x4½	SS	†6500	....	....	....	7500	7700	....
BRISCOE																	
B4-24	4-3¹⁄₁₆x5½	16.3	Conn	Mayer	Splitdorf	C	3	105	30x3½	QD	685	685	†685	....	....	....	....
8-38	8-3 x3½	28.8	Remy	Zenith	Apleo	C	3	114	32x3½	QD	‡985	985	....	....	....	....	....
4-38	4-3¹⁄₁₆x5½	18.9	Remy	Mayer	Apleo	C	3	114	32x3½	QD	‡785	785	....	....	....	....	....
BRUNSWICK																	
	4-4½x5½	36.1	Bosch	Rafid	Wsths	..	3	....	....	....	....	....	1950	....	....	....	....
BUICK																	
D 4-34-35	4-3½x4½	18.2	Deleo	Marvel	Deleo	C	3	106	31x4	C	660	675	....	....	....	....	....
6-44-47	6-3½x4½	25.3	Deleo	Marvel	Deleo	C	3	115	34x4	SS	1040	1070	‡1440	....	1835	....	....
E-49	6-3½x4½	27.3	Deleo	Marvel	Deleo	DD	3	124	34x4½	SS	....	....	1385	....	....	....	....
CADILLAC																	
55	8-3½x5½	31.2	Deleo	Own	Deleo	D	3	{132 / 125	36x4½	SS	†2240	2240	2240	2960	....	3760	2835
CASE																	
T-17	4-3½x6	21.0	Conn	Rafid	A-Lite	C	3	120	34x4	QD	†1190	....	1190	....	....	....	....
CHALMERS																	
6-30	6-3½x4½	25.4	Remy	Stmbg	Wsths	DP	3	{115 / 122	32x4	SS	1230	1250	1350	1440	1850	2550	....
CHANDLER																	
17	6-3½x5	27.3	Bosch	Rafid	G & D	D	3	123	34x4	SS	†1395	....	1395	1995	1995	2695	1995
CHEVROLET																	
4-90	4-3½x4	21.7	Conn	Zenith	A-Lite	C	3	102	30x3½	C	550	550	....	....	....	....	....
F5-F2	4-3½x4	21.7	Conn	Zenith	A-Lite	C	3	112	32x3½	SS	800	800	....	....	....	....	....
D	8-3½x4	35.45	Conn	....	A-Lite	C	3	120	34x4	SS	1385	....	....	....	....	....	....
COLE																	
8-60	8-3½x4½	39.2	Deleo	Stmbg	Deleo	C	3	127	35x4½	SS	†1695	....	1695	....	2295	2295	2195
CROW-ELKHART																	
CE-35	4-3½x5	19.6	Conn	Zenith	Dyneto	DP	3	114	32x3½	SS	†825	795	....	....	....	....	935
DANIELS																	
8	8-3½x5	33.8	Wsths	Zenith	Wsths	D	3	127	34x4½	QDR	†2600	....	2800	....	....	4000	....
DAVIS																	
H & I	6-3½x4½	25.3	Deleo	Stmbg	Deleo	C	3	119	34x4	....	1195	1195	1195	1595	1795	....	1995
J	6-3½x5½	29.4	Deleo	Stmbg	Deleo	C	3	124	34x4½	....	....	1495	1495	....	....	....	....
DETROITER																	
6-45	6-3½x4½	25.3	Conn	Ball	A-Lite	D	3	119	33x4	SS	‡1195	1195	....	1373	....	....	1398
F	4-3½x4½	22.5	Dixie	Schebler	Dyneto	D	3	112	33x4	SS	....	985	....	....	....	....	....
DISPATCH																	
G	4-3½x5	22.5	Bosch	Rafid	U.S.L.	D	4	120	36x3½	....	1135	1210	....	1400	....	....	....
DIXIE FLYER																	
1917	4-3½x5	16.9	Conn	Carter	Dyneto	C	3	112	32x3½	SS	†795	795	....	....	....	....	....
DODGE BROTHERS																	
	4-3½x4½	24	Deleo	Stewart	N.E.	D	3	114	32x3½	S	785	785	...	950	1185	....	950
DORRIS																	
1-B-6	6-4 x5	38.4	Bosch	Stmbg	Wsths	D	3	128	36x4½	SS	...	...	2475	2250	2250	2675	...

Model	Motor	S. A. E.	Ignition	Carburetor	Starter	Clutch	Gearset	Wheelbase	Tire	Rims	2-Passenger	5-Passenger	7-Passenger	Coupe	Sedan	Limousine	Detachable Top
LOZIER																	
84	4-4½x6½	28.9	Bosch	Stewart	G & D	D	4	120	36x4½	SS	....	....	1695	....	..		....
82	6-3½x6	36.0	Eisman	Rafid	G & D	D	3	132	36x4½	SS	....	....	2775	....	....	....	....
LUVERNE																	
17	6-3½x5	33.7	Bosch	Schebler	Bosch	DD		132	35x4½	SS	....	....	1500	....	....	....	....
MADISON																	
4	6-3½x5	23.4	Remy	Rafid	Remy	DD	3	120	34x4	SS	....	....	....	....	....	....	....
	6-3½x5	23.4	Remy	Rafid	Remy	DD	3	115	34x4	SS	1050–1150		....	....	....	....	....
	6-3½x5	23.4	Remy	Rafid	Remy	DD	3	124	34x4	SS	†1150	{1150 / 1250}	1150–1250	....	....	....	....
MAIBOHM																	
A	4-3½x4	15.6	A.Kent	Zenith	Disco	DD	3	105	30x3½	SS	695	....	....	....	....	....	....
MAJESTIC																	
M	8-3 x5	28.8	A.Kent.	....	R & M	DP	3	125	32x4	....	†1500	1650	1650	....	....	....	....
A	8-3½x5	33.8	A.Kent	....	R & M	DP	3	135	35x5	....	†3000	3000	3000	....	....	....	....
MARION HANDLEY																	
6-40	6-3½x5	23.4	Wsths	Stmbg	Wsths	DD	3	120	32x4	SS	†1275	....	1275	....	....	....	....
6-60	6-3½x5½	29.4	Wsths	Stmbg	Wsths	DD	3	125	35x4½	SS	....	....	1475	....	....	....	....
MARMON																	
34	6-3½x5½	33.7	Bosch	Stmbg	Bosch	C	3	136	34x4½	QD	††3100	3050	3100	....	4100	4500	....
MAXWELL																	
25	4-3½x4½	21	Sims	K-D	A.Kent	C	3	103	30x3½	C	620	635	....	865	985	....	....
McFARLAN																	
	6-4½x6	48.6	Bosch	Stmbg	Wsths	DP	3	136	35x5	QDR	3750	3800	3500	....	....	....	....
MERCER																	
22-73	4-3½x6½	22.5	Bosch	Corser	U.S.L.	DD	4	132	34x4½	QDC	†3500	*3500	..	....	....	....	....
22-73	4-3½x6½	22.5	Bosch	Corser	U.S.L.	DD	4	115	32x4	QDC	3400	Raceabout, 3250	..	....	....	....	....
METZ																	
25	4-3½x4	24	Dixie	A.W.T.	G & D	F		108	32x3½	C	545	545	....	....	....	....	....
MITCHELL																	
D-40	6-3½x5	25.4	Conn	Rafid	Splitdorf	C	3	120	32x4	SS	1150	1150	....	....	....	....	300x
C-42	6-3½x5	29.4	Conn	Rafid	Wsths	C	3	127	34x4	SS	‡1425	1425	1400	1995	2175	2785	300x
MOLINE-KNIGHT																	
C	4-3½x5	22.5	Conn	Schebler	A-Lite	C	3	118	34x4	SS	†1495	1495	....	....	....	....	....
G	4-4 x6	25.6	Conn	Schebler	A-Lite	C	3	122	35x4½	SS	†1840	....	1840	2490	2440	....	....
MONARCH																	
	8-3 x5	28.8	A.Kent	Zenith	....	D	3	125	35x4½	....	....	1500	....	....	....	....	....
MONITOR																	
C-R	4-3½x4½	22.5	Heinse	Schebler	Heinse	D	3	108	32x3½	SS	795	795	....	....	....	....	....
N-O	6-3½x4½	25.4	Heinse	Stmbg	Heinse	D	3	115	33x4	SS	995	995	....	....	....	....	....
MONROE																	
M-3	4-3 x4½	14.4	Conn	Zenith	A-Lite	DD	3	96	30x3	DC	565	....	....	....	965	....	....
M-4	4-3½x4½	16.9	Conn	Zenith	A-Lite	DD	3	115	32x4	DC	....	985	....	....	....	....	....
MOON																	
6-43	6-3½x4½	25.3	Deleo	Rafid	Deleo	DD	3	118	32x4	SS	‡1295	1295	....	....	....	....	1450
6-66	6-3½x5½	29.4	Deleo	Rafid	Deleo	DD	3	125	35x4½	SS	†1690	....	1690	1690	2350	....	....
MURRAY																	
70-T	8-3½x5	33.8	Dixie	Zenith	Wsths	DP	3	128	34x4½	..	2500	....	2500	....	....	Chassis	2000
NATIONAL																	
Hgy	6-3½x5½	29.4	Dixie	Rafid	Wsths	C	3	128	34x4½	QDR	†1750	....	1750	2400	2350	....	....
Hgy	12-2½x4½	39.7	Deleo	Rafid	Bijur	C	3	128	34x4½	QDR	†2150	....	2150	2800	2750	....	....
NELSON																	
	4-3½x4½	15.6	Bosch	Zenith	U.S.L.	D	3	104	32x4	SS	....	....	....	....	2300	....	....
OAKLAND																	
34	6-2½x4½	18.9	Deleo	Marvel	Deleo	C	3	112	32x4	SS	‡ 875	875	....	....	....	....	{995 / 1020}
50	8-3½x4½	39.2	Deleo	Stmbg	Deleo	C	3	127	34x4½	SS	....	....	1585	....	....	....	....
OLDSMOBILE																	
45	8-2½x4½	26.4	Deleo	Johnson	Deleo	C	3	120	33x4	SS	1295	1295	....	....	1850	....	1775
46	6-2½x4½	19.8	Deleo	Johnson	Deleo	C	3	112	32x4	SS	†1095	1095	...	....	....	....	....
OVERLAND																	
85-4	4-4½x4½	27.2	Conn	Titan	A-Lite	C	3	112	32x4	SS	835	850	....	1250	1450	....	....
85-6	6-3½x4½	25.3	Conn	Titan	A-Lite	C	3	116	32x4	SS	970	985	....	1385	1585	....	....
OWEN																	
M-25	6-3½x5½	29.4	Bosch	Zenith	O-M	OM	..	125	34x4½	SS	....	3300	....	3650	....	4350	....
O-36	6-3½x5½	33.7	Bosch	Zenith	O-M	OM	..	136	35x5	SS	‡3950	†3950	3950	....	....	5000	....
PACKARD																	
2-35																	
2-25	12-3 x5	43.2	Bijur	Own	Bijur	DD	3	{135 / 136}	35x5	QDC	3050	3050	3050	4150	....	4450	....
PAIGE																	
6-38	6-3½x5	23.4	Remy	Rafid	G & D	D	3	117	32x4	SS	1175	1175	....	....	....	....	....
6-46	6-3½x5½	29.4	Remy	Rafid	G & D	D	3	124	34x4½	SS	...	...	1495	...	...	....	....

*2-passenger. †4-passenger. ‡5-passenger.

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DORT																		
9	4-3½x5	16.9	Conn	Carter	Wsths	C	3	106	30x3½	QDC	‡995	995	..	..	1095		815
DREXEL																		
R-30-35	4-3½x5	19.6	Bosch	Stmbg	Bijur	C	3	112	32x4	...	855	855	....	....	....	....	....
	4-3½x5	19.6	Bosch	Stmbg	Bijur	D	3	113	34x4	....	†1455	....	1345	....	....	....	....
ELCAR																		
D.P.	4-3½x5	19.6	Delco	Carter	Dyneto	DP	3	115	32x3½	SS	645	645	†845	....	....	....	....
ELGIN																		
	6-3 x4½	21.6	Remy	Stmbg	Wagner	DP	3	116	33x4	....	†985	935	....	....	....	....	....
EMERSON																		
Four	4-3½x4	22.5	A.Kent	Kngstn	....	D	3	110	30x3½	C	....	395	....	....	....	....	....
EMPIRE																		
45	4-3½x5	24.0	A-Lite	Stmbg	A-Lite	C	3	116	33x4	SS	....	950	....	....	....	....	....
60-R	4-3½x4½	25.6	Conn	Stmbg	A-Lite	C	3	120	34x4	SS	†1145	....	....	....	1895	....	....
70	6-3½x4½	25.6	Conn	Stmbg	A-Lite	DP	3	120	34x4	SS	....	1235	....	....	....	....	....
ENGER																		
12	12-2½x3½	34.2	Wsths	Stmbg	Wsths	DP	3	116	32x4	SS	....	1295	....	....	....	....	....
4	4-3½x4½	21.7	A-Kent	....	....	C	3	106	32x3½	....	....	695	....	....	....	....	....
FIAT																		
55	4-5½x6½	42		Wsths	Zenith	Wsths	B	4	140	35x5	QDC	....	....	5500	....	....	6500	....
56	6-4½x6	45.9	Bosch	Own	Own	D	4	135	37x5	QDC	‡5350	5350	5350	....	....	....	....
FORD																		
T	4-3½x4	22.5	Own	{Holly Kngstn	....	D	2	100	30x3½	C.	345	360	....	505	645	....	....
FOSTORIA																		
	4-3 x4½	14.4	Remy	Zenith	....	D	3	106	30x3½	C	....	695	....	....	....	....	....
FRANKLIN																		
9	6-3½x4	25.3	A.Kent	Own	Dyneto	D	3	115	32x4	SS	1800	1850	†1850	2650	2750	2000	....
GLIDE																		
6-40	6-3½x5	23.4	Wsths	Rafld	Wsths	D	3	119	34x4	SS	....	1250	....	....	1325	....	....
GRANT																		
K	6-3 x4½	21.6	Remy	Stmbg	Wagner	C	3	112	32x3½	....	‡825	825	....	1050	1000	....	....
HACKETT																		
Four	4-3½x4½	22.5	Conn	Carter	Dyneto	D	3	112	32x3½	SS	†888	888	....	....	....	....	....
H. A. L.																		
	12-2½x5	39.7	....	Stmbg	Wsths	DP	3	135	34x4½	SS	2600	†2600	2600	....	....	4500	3500
HALLADAY																		
S	6-3 x5	21.6	A-Lite	Stmbg	Wsths	D	3	118	33x4	SS	‡1185	1150	....	....	....	....	....
R	6-3½x5	23.4	Wsths	Stmbg	Wsths	D	3	122	34x4	SS	1385	1385	....	....	....	....	....
HARROUN	4-3½x5½	16.9	Bosch	Special	Remy	C	3	106	30x3½		....	595	....	....	....	....	....
HARVARD																		
4-2T	4-3 x4½	14.4	....	Zenith	Wagner	C	3	100	28x3	QD	750	....	....	....	....	....	....
HAYNES																		
36	6-3½x5	29.4	Remy	Rafld	L-N	DP	3	121	34x4	SS	....	1595	....	....	2260	....	....
37	6-3½x5	29.4	Remy	Rafld	L-N	DP	3	127	35x4½	SS	†1725	....	1725	....	2290	....	....
40	12-2½x5	36.3	Delco	Rafld	L-N	DP	3	121	34x4½	SS	....	2095	....	....	2760	....	....
41	12-2½x5	36.3	Delco	Rafld	L-N	DP	3	127	34x4½	SS	†2225	....	2225	....	2890	....	....
HOLLIER																		
186	6-3 x4½	21.6	Remy	Stewart	A-C	C	3	116	32x3½	SS	....	895	....	....	....	....	....
178	8-3 x4½	28.8	A.Kent	Stewart	Apleo	C	3	116	34x4	SS	†1185	1185	....	....	....	....	....
HUDSON																		
Super-6	6-3½x5	29.4	Delco	Own	Delco	D	3	125½	35x4½	SS	1650	....	1650	1950	2175	2925	....
HUPMOBILE																		
	4-3½x5½	22.5	A.Kent	Zenith	Wsths	D	3	119	34x4	SS	1185	1185	....	....	1735	....	....
N-U	4-3½x5½	22.5	A.Kent	Zenith	Wsths	D	3	134	35x4½	SS	....	....	1240	....	....	....	....
INTER-STATE																		
T	4-3½x5	19.6	Remy	Schebler	Remy	C	3	110	33x4	SS	875	925	†940	....	....	....	....
JACKSON																		
349	8-3 x3½	28.8	A-Lite	Zenith	A-Lite	DP	3	118	34x4	SS	1295	1295	†1395	....	1995	....	1505
350	8-3 x3½	28.8	A-Lite	Zenith	A-Lite	DP	3	112	32x4	SS	....	1195	....	....	....	....	....
JEFFERY																		
Four	4-3½x5½	22.5	Dixie	Stmbg	Bijur	DP	3	116	34x4	SS	1065	....	1095	....	1260	....	1320
Six	6-3½x5½	29.4	Dixie	Rafld	Bijur	DP	3	125	34x4	SS	1435	....	1465	....	1630	....	1690
JORDAN																		
Sixty	6-3½x5½	29.4	Bosch	Stmbg	Bijur	DD	3	127	35x4½	SS	1650	†1750	1650	2300	2350	3000	....
KING																		
E	8-3 x5	28.8	A.Kent	Ball	W.Lnrd	DP	3	120	34x4	SS	†1585	‡1585	1585	....	2150	....	....
KISSEL																		
642	6-3½x5½	31.54	Eisman	Stmbg	Own	DD	3	128	34x4	SS	....	1650	1850	....	2000	....	....
100-pt.	6-3½x5	25.3	Remy	Stmbg	Own	C	3	117	33x4	SS	†1195	1195	....	1635	1950	....	1635
KLINE																		
638	6-3½x4½	25.3	Wsths	Rafld	Wsths	DP	3	120	34x4	SS	1175	1195	†1195	....	....	....	....
LAUREL																		
35	4-3½x4½	22.5	Dixie	Schebler	Disco	D	3	112	32x3½	QD	†895	850	885	....	....	....	....
LEXINGTON																		
6-O-17	6-3½x4½	25.3	Conn	Rafld	Wsths	DD	3	116	32x4	QD	†1185	1185	....	1350	1350	....	....
6-P	6-4½x5½	40 8	A.Kent	Stmbg	Wsths	C	3	144	36x4½	QD	†2675	....	2875	....	....	....	....
								132									
LIBERTY																		
6	6-3½x4½	23.4	Delco	Rafld	Delco	DP	3	115	32x4		†1195	1195	....	....	1795	....	....
LOCOMOBILE																		
R-7	6-4½x5	43.3	Eisma	Ball	Wsths	DD	4	130	37x5	QDC	†4750	*4600	4600	....	....	3800	....
M-7	6-4½x5½	48.6	Eisma	Own	Wsths	DD	4	142	37x5	QDC	*5400	....	5400	....	....	6500	....
PARTIN-PALMER																		
20	4-3½x4½	15.6	Conn	Schebler	A-C	DD	3	96	30x3½	C	845	..	....	....	.....	..	....
32	4-3½x5	19.6	Conn	Carter	Disco	DD	3	110	32x3½	C	...	695	....	....	....	....	....
PATERSON																		
6-45	6-3½x4½	25.4	Delco	Stmbg	Delco	C	3	117	32x4	C	†1095	1095	1095	....	....	....	....
PATHFINDER																		
2B-TC-2C	12-2½x5	39.7	Delco	Stmbg	Delco	DD	3	135	35x5	SS	....	....	3250	....	....	....	....
PEERLESS																		
56-2	8-3½x5	33.8	A.Kent	Special	G & D	DD	3	125	35x4½	SS	†1890	....	1890	2700	2750	3260	....
PHIANNA																		
M	4-3½x6	24 9	Bosch	H & N	W.Lnd.	DD	4	....	32x4½	....	Chassis	....	3600	....	....	....	....
PIERCE-ARROW																		
38-C-4	6-4 x5½	38.4	Bosch	Own	Wsths	C	4	134	36x4½	QDC	4800	4800	†4800	5900	....	....	....
48-B-4	6-4½x5½	48 6	Bosch	Own	Wsths	C	4	142	37x5	QDC	5400	5400	5000	6800	....	....	....
66-A-4	6-5 x7	60	Bosch	Own	Wsths	C	4	147½	38x5½	QDC	†6400	6400	6500	7800	....	....	....
PILOT																		
6-45	6-3½x5	23.4	Delco	Zenith	Delco	DP	3	119	32x4	SS	†1150	1150	....	....	....	....	....
PREMIER																		
6-B	6-3½x5½	27.3	Delco	Johnson	Delco	DP	3	125½	35x4½	SS	†1895	....	1895	....	2900	3150	....
PRINCESS																		
4-36	4-3½x4½	22.5	Splitdorf	Schebler	Disco	D	3	108	32x3½	....	775	775	‡775	....	....	....	....
PULLMAN																		
424-32	4-3½x4½	22.5	Dixie	Stmbg	Splitdorf	D	3	114	31x4	SS	825	825	†825	....	....	....	....
REGAL																		
4-32	4-3½x4½	19.6	Heinze	Carter	Heinze	C	3	108	30x3½	DC	....	745	....	....	....	....	....
F	8-3 x4½	28.8	....	Johnson	Dyneto	C	3	115	33x4	SS	1200	....	....	....	....	....	....
REPUBLIC																		
E	6-4½x5	43.3	Delco	Rafld	Delco	C	4	133	36x4½	SS	....	†2950	2950	....	....	....	....
REO																		
M	6-3½x5½	30 4	Remy	Rafld	Remy	DD	3	126	34x4½	SS	....	†1250	1250	....	1750	....	....
R	4-4½x4½	27.2	Remy	Johnson	Remy	DD	3	115	34x4	SS	‡875	875	....	....	....	....	1025
RICHMOND																		
6-17	6-3½x5	29.4	Delco	Stmbg	Delco	C	3	124	35x4½	....	....	....	....	....	....	.....	.....
4-35	4-4 x4½	25.6	Dixie	Stmbg	Delco	C	3	124	35x4½	....	900	900	925	....	....	....	....
ROAMER																		
R.A.	6-3½x5	23.4	Bosch	Stmbg	Bijur	D	3	127	34x4	SS	2150	1850	....	....	....	....	....
ROSS																		
C	8-3½x5	33.8	A.Kent	Zenith	W.Lnrd.	DD	3	130	35x4½	SS	‡1550	†1550	1550	....	....	....	....
SAXON																		
B-5-R	4-2½x4	12.1	A.Kent	Rebh	Wagner	DD	3	96	30x3	DC	495	....	....	....	....	....	....
S-4	6-2½x4½	19.8	Remy	Rafld	Wagner	DD	3	112	32x3½	SS	....	865	....	....	....	....	....
SCRIPPS-BOOTH																		
D	8-2½x3½	22.0	Remy	Zenith	Wagner	DD	3	120	32x4	SS	†1285	....	....	....	....	....	1460
G	4-3½x4	24.5	Remy	Zenith	Remy	C	3	110	30x3½	C	935	....	....	1450	....	....	....
SIMPLEX																		
5	6-4½x6½	45.9	Eismn	Nwemb	Bosch	D	4	143½	37x5r	QDC	Chassis	6000	....	....	....	....	....
SINGER																		
17	6-4 x5½	38.4	Bosch	Rafld	Wsths	DD	4	136	35x5	QD	3500	†3500	3500	....	....	4600	....
STANDARD																		
8	8-3½x5	33.8	Splitdorf	Zenith	Apleo	D	3	127	35x4½	....	†1950	....	2000	....	....	3500	2500
STANLEY																		
Steamer	2-4 x6	....	....	....	....	..	..	130	34x4½	SS	‡2300	2200	2300	....	....	....	....
STEARNS																		
SKL4	4-3½x5½	22.5	Remy	Schebler	Wsths	DD	3	119	34x4	QDC	††1450	1450	....	2050	....	2900	2050
SK8	8-3½x5	33.8	Remy	Rafld	Wsths	DD	3	123	35x4½	QDC	†2150	....	2150	2900	....	3500	....
STEPHENS																		
60-65	6-3½x4½	25.3	Conn	Zenith	A-Lite	DD	3	115	32x4	....	‡1150	1150	....	....	....	....	....
STEWART																		
T	6-3½x5	29.4	Bosch	Rafld	Wsths	D	3	127	34x4½	SS	‡1950	....	1950	....	....	....	....
STUDEBAKER																		
SF-4-40	4-3½x5	24.0	Remy	Schebler	Wagner	C	3	112	34x4	SS	‡930	....	940	....	....	....	1140
ED-6-50	6-3½x5	36.32	Remy	Schebler	Wagner	C	3	122	34x4	SS	‡1170	....	1180	1750	1700	2600	1380
STUTZ																		
R	4-4½x5½	36.1	Bosch	Stmbg	Remy	C	3	130	34x4½	SS	2275	†2550	*2550	....	....	....	....
SUN																		
17	6-3½x5	23.4	Remy	Rafld	Remy	DP	3	116	34x4	SS	†1145	1095	1145	....	1295	....	....
VELIE																		
28	6-3½x4½	25.3	Remy	Stmbg	Remy	DP	3	115	32x4	SS	1115	1135	†1135	1750	1685	....	....
27	6-3½x5½	29.4	Remy	Stmbg	Remy	DP	4	124	35x4½	SS	....	....	1600	....	....	....	....
WESTCOTT																		{2190
S-17	6-3½x5½	29.4	Delco	Rafld	Delco	DD	3	125	35x4½	SS	1590	1590	1690	....	....	....	{2090
WHITE																		
GAH	4-3½x5½	22.5	Bosch	Own	Own	P	4	115	32x4	QDC	‡2650	2700	.....	..	....	....	....
GED	4-4½x6½	28.9	Bosch	Own	Own	P	4	133½	36x4½	QDC	3750	....	3800	....	....	....	....
16-Valve	4-4½x5½	28.9	....	Own	L.N.	P	4	137½	37x5	....	....	....	4600	....	....	....	....
WILLYS-KNIGHT																		
88-4	4-4½x4½	27.2	Conn	Tltsn	A-Lite	C	3	121	34x4½	SS	....	....	1285	....	1950	1950	....
WILLYS																		
88-6	6-3½x5½	29.4	Conn	Tltsn	A-Lite	C	3	125	35x4½	SS	....	....	1325	....	....	....	....
WINTON																		
33	6-3½x5½	33.7	Bosch	Rafld	Bijur	DD	4	128	36x4½	QD	2685	2685	2735	3600	3900	3900	....
48	6-4½x5½	48.6	Bosch	Rafld	Bijur	DD	4	138	37x5	QD	3500	3500	3500	4500	4750	4750	....
YALE																		
8	8-3½x4½	31.3	Remy	Rafld	Disco	DD	3	126	34x	....	....	....	1350	....	....	....	....

*6-passenger. †4-passenger, ‡3-passenger.

ABBREVIATIONS—"A-C" Allis-Chalmers, "L-N" Leece-Neville, "Tltsn" Tillottson, "Atzr" Atomizer, "Rebh" Reichenbach, "DD" Dry Disk, "DP" Dry Plate, "G" Gearless, "F" Friction, "QDR" Quick Detachable Reversible, "QDC" Quick Detachable Clincher, "R & M" Robbins & Myers. NOTE—"37½x5½r" means that the rear tires are 37x5½, and the front are smaller. Detachable top, 300x mean $300 extra.

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PULL-MORE FRONT DRIVE TRUCK DEVELOPED

PITTSBURGH, Pa., Feb. 1—The Pull-More Motor Truck Co. is a new $1,000,000 concern with the following officers: E. M. S. Young, formerly vice-president of the Standard Gage Steel Co., Beaver Falls, Pa., president and general manager; Col. H. P. Bope, first vice-president and general sales manager of the Carnegie Steel Co., vice-president; Kenneth R. Cunningham, secretary and treasurer; J. M. Richards, formerly general superintendent of the Standard Gage Steel Co., works manager, and H. H. Marker, chief engineer.

The Pull-More trucks will be manufactured in one 3-ton model and will sell at about $3,400 in the chassis, although this price has not been definitely fixed. The vehicle has many unique features. These include an unusual powerplant assembly which drives to the front wheels and the upper half of which may be revolved, together with the complete cab, about hinges on one side. This exposes the crankshaft and crankpin connecting rod bearings, the clutch, gearset and differential for inspection and repair. Another unusual feature is that the powerplant and front wheels are a unit.

NEW YORK DEALERS ELECT NEW DIRECTORS

NEW YORK, Feb. 9—Fifty dealers attended the annual meeting and dinner of the Automobile Dealers Association. The following directors were elected to serve one year: E. S. Hare, Packard; C. M. Brown, Winton; H. H. Stratton, Dodge; Wm. C. Poertner, National; R. H. Johnston White; S. DeB. Keim Locomobile; Wm. Parkinson, Stutz; F. J. Carrie, Marmon; W. T. Savoy, Autocar; John F. Plummer, Liberty.

Coming—THE SHOW CALENDAR—Events

Harrisburg, Pa.	Capital City Motor Car Dealers Assn., 10th and Market Streets; Mgr.: J. Clyde Myton.	Feb. 10-17
Hartford, Conn.	Hartford Automobile Dealers Assn., State Armory; Mgr.: B. F. Smith.	Feb. 10-17
San Francisco	San Francisco Motor Car Dealers Assn., Exposition Auditorium; Mgr.: G. A. Wahlgreen.	Feb. 10-18
Toledo, O.	Toledo Auto Shows Co.; Mgr.: H. V. Buelow.	Feb. 12-17
Louisville, Ky.	Tenth Annual, First Regiment Armory, Louisville Automobile Dealers Assn.; Mgr.: P. S. Longest.	Feb. 12-17
Kansas City	Kansas City Motor Car Dealers Assn.	Feb. 12-17
Kansas City	Second Annual Tractor Show, Union Station Plaza.	Feb. 12-17
Williamsport, Pa.	Armory Hall; Mgr.: John Kelley.	Feb. 13-17
Sioux City, Ia.	Sioux City Auto Dealers Trade Assn., Auditorium and Annex; Mgr.: J. A. Fleming.	Feb. 13-17
Peoria, Ill.	Peoria Automobile and Accessory Dealers Assn., Coliseum; Mgr.: W. O. Ireland.	Feb. 14-17
Racine, Wis.	Fifth Annual, Racine Auto Show Assn., Lake Side Auditorium; Mgr.: Charles A. Myers.	Feb. 15-18
Albany, N. Y.	Sixth Annual, State Armory, Albany Automobile Dealers Assn.	Feb. 17-24
Bridgeport, Conn.	Fourth Annual, State Armory and Casino; Mgr.: B. B. Steiber.	Feb. 19-24
Pittsfield, Mass.	State Armory; Mgr.: James L. Callahan.	Feb. 19-24
Portland, Me.	Exposition Building	Feb. 19-24
South Bethlehem, Pa.	Third Annual, Pleasure Cars, Coliseum; Mgr.: J. L. Elliott.	Feb. 19-24
St. Louis	St. Louis Automobile Manufacturers and Dealers Assn., Overland Bldg.; Mgr.: Robert E. Lee.	Feb. 19-24
Duluth, Minn.	New Armory Bldg., Duluth Automobile Dealers Assn.; Mgr.: W. Daly.	Feb. 19-24
Syracuse, N. Y.	State Armory, Syracuse Automobile Dealers Assn.; Mgr.: H. T. Gardner.	Feb. 19-24
Des Moines, Ia.	Eighth Annual, Des Moines Automobile Dealers Assn., Coliseum; Mgr.: C. G. Van Vliet.	Feb. 19-24
Grand Rapids, Mich.	Eighth Annual Automobile Business Assn. of Grand Rapids, Klingman Furniture; Mgr.: Ernest T. Conlon.	Feb. 19-24
Springfield, O.	Memorial Hall, Springfield Automobile Trade Assn.; Sec.: C. S. Burke.	Feb. 19-24
South Bethlehem, Pa.	Pleasure Cars; J. L. Elliott, Mgr.	Feb. 19-24
Springfield, Mo.	Springfield Automobile and Accessories Assn.; Convention Hall.	Feb. 21-23
Flint, Mich.	Flint Automobile and Accessory Houses, Coliseum, Lake Side Park; Mgr.: E. W. Jeffers.	Feb. 21-24
Wausau, Wis.	First Annual, Automobile Dealers Assn.; Grand Opera House.	Feb. 21-24
Asheville, N. C.	Asheville Automobile Trade Assn.	Feb. 22-24
Newark, N. J.	N. J. Automobile Trade Assn., First Regiment Armory; Mgr.: Claude E. Holgate.	Feb. 24-Mar. 3
Atlanta, Ga	Atlanta Automobile Trade and Accessory Assn., Auditorium; Mgr.: R. H. Martin.	Feb. 24-Mar. 3
Brooklyn, N. Y.	Sixth Annual, Brooklyn Motor Vehicle Dealers Assn., Twenty-third Regiment Armory.	Feb. 24-Mar. 6
Charleston, S. C.	First Charleston Adv. Club and Local Dealers Tent, Marion Square; Mgr.: Sidney Rittenberg.	Feb. 26-Mar. 3
Wilkes-Barre, Pa.	Mgr.: Hugh B. Andrews	Feb. 26-Mar. 3
Utica, N. Y.	Utica Automobile Dealers Assn., State Armory.	Feb. 26-Mar. 3
Omaha, Neb.	Twelfth Annual Omaha Automobile Show Assn.; Mgr.: Clarke G. Powell.	Feb. 26-Mar. 3
South Bethlehem, Pa.	Commercial Vehicles; Mgr.: J. L. Elliott.	Feb. 26-Mar. 3
Oneonta, N. Y.	Armory; Mgr.: John Kelly	Feb. 28-Mar. 3
Champaign and Urbana, Ill.	Automobile Trade Association of Champaign County, University of Illinois, Armory; Mgr.: Leslie R. Lumley.	Mar. 1-3
Green Bay, Wis.	Brown County Automobile Trade Assn., Armory B.	Mar. 3-5
Washington, D. C.	Middle Atlantic Motor Assn., Inc., Union Bldg.	Mar. 3-10
Boston	Fifteenth Annual, Boston Automobile Dealers Assn.: Gen. Mgr.: C. I. Campbell.	Mar. 3-10
Jamestown, N. Y.	Third Annual, Jamestown Automobile Dealers Assn., Armory; Mgr.: C. A. Hanvey.	Mar. 5-10
Wheeling, W. Va.	Automobile Dealers Assn., Market Auditorium Bldg.; Mgr.; F. A. Henderson.	Mar. 5-10
Bridgeton, N. J.	Second Annual, Bridgeton Automobile Dealers Assn., Preston Calender Plant; Mgr.: J. W. Acton.	Mar. 6-10
Fort Dodge, Ia.	Sixth Annual, White Terminal Warehouse; Mgr.: G. W. Tremain.	Mar. 6-10
St. Joseph, Mo.	St. Joseph Automobile Dealers Assn., Auditorium; Harry E. Mooers, Mgr.	Mar. 7-10
Zanesville, Ohio	Muskingum Motor Club.	Mar. 10-17
Vancouver, B. C.	British Columbia Automobile Assn., Horse Show Building.	Mar. 12-17
Fargo, N. D.	North Dakota and Minnesota Auto Dealers Assn., Auditorium and Armory; Mgr.: W. M. Ball.	Mar. 13-16
Mason City, Ia.	Third Annual, Armory	Mar. 14-17
Davenport, Ia.	Coliseum Bldg., Tri-City Automobile Trade Assn.; Mgr.: C. F. Burmeister.	Mar. 14-17
Pittsburgh, Pa.	Automobile Dealers Assn. of Pittsburgh; Motor Square Garden; Mgr., J. J. Bell.	Mar. 17-24
Paterson, N. J.	Sixth Annual Paterson Automobile Dealers Assn., Auditorium; Mgr.: Robert A. Mitchell.	Mar. 19-24
Cedar Rapids, Ia.	Cedar Rapids Automobile Trade Assn., Coliseum.	Mar. 19-24
Trenton, N. J.	Trenton Automobile Trade Assn., Armory; Mgr.: John L. Brock.	Mar. 21-24
Deadwood, S. D.	Fifth Annual; Mgr.: J. E. Nelson.	Mar. 27-31
Clinton, Ia.	Second Annual, Clinton Automobile Dealers Assn.	Mar. 27-31
Stockton, Cal.	Second Annual San Joaquin Auto Trades Assn.; Mgr.: Samuel S. Cohn.	April 4-7
Spokane, Wash.	Interstate Fair	Sept. 2-9
Milwaukee, Wis.	Third Annual Fall, State Fair Park, West Allis.	Sept. 9-15

General

Hot Springs, Va.	Summer Meeting, National Association of Automobile Accessory Jobbers, Homestead Hotel.	June 4-5-6

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-Rolling Stock-

The MICHELIN co-operative Dealer Plan will keep your stock moving



A new standard of dealer co-operation—that is what the Michelin Tire Company offers you.

Please bear this in mind, because it is important.

The high quality and moderate price of Michelin Tires would of themselves make sales for you. But backed up as these features are by selling help from the Michelin factory such as no other tire maker has yet offered, they mean success on a new scale for you.

This is a sweeping statement, but we can prove that it is true.

You must agree that if it *is* true, it's a big thing for you.

So don't you think you owe it to yourself to drop us a line, and give us a chance to present the proof?

When will we hear from you?

Michelin Tire Co.
Milltown, N. J.

When writing advertisers please mention Motor World

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There are over 600 Rayfield Service Stations in America

Build your *Success* on your *Service*



To deserve a reputation for good service and honesty is the best possible foundation for a successful business structure.

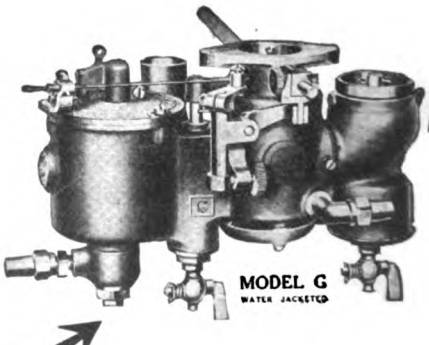
RAYFIELD CARBURETORS

When your customer's car shows carburetor weakness, replace with a Rayfield. That's good service and good business. Tell him you'll return his money if he is not entirely satisfied after using the Rayfield for 30 days.

It will increase his mileage from 20 to 50%—and give him more speed range, more power, quicker starting and pickup—and better performance, summer and winter.

are sold to the car-owner with a money-back Unconditional Guarantee

The Rayfield has but two adjustments; one for high speed, and the other for low speed.



Findeisen & Kropf Mfg. Co.
2101 Rockwell St., Chicago

BRANCHES:
1140 Michigan Ave., CHICAGO **1902 Broadway, NEW YORK**

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Car Buyers Now Know the Meaning of Velie Values

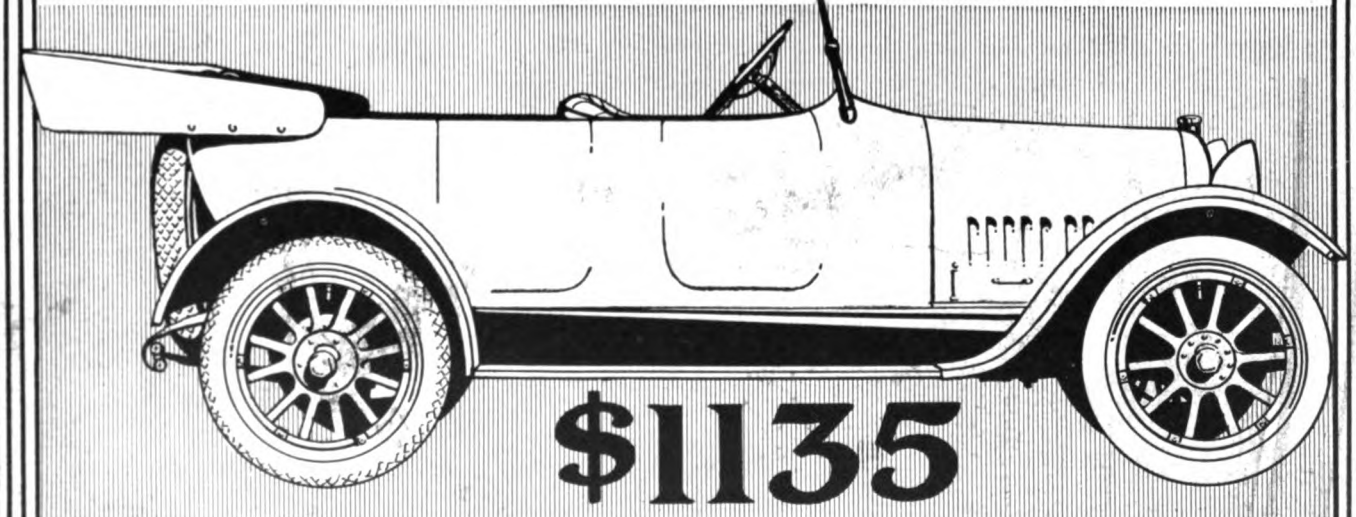


Velie Biltwel Six

THEY have been to the Automobile shows. Side by side with ordinary cars they have marveled at the superiority of Velie Biltwel Six—the Bigger—Better—More Powerful Car—the car for the woman driver as well as the man.

They have made their own comparisons. They realize *how much more* the Velie offers at its low price. The Velie's deep-tufted, genuine leather upholstery—long, roomy body—powerful Velie *special* Continental motor—Timken axles front and rear—multiple disc clutch—long, underslung springs—push button starter—every Velie feature is a more powerful sales force today than ever before. Eight body styles open and closed give a range of choice for every customer. Send for our liberal proposition.

VELIE MOTORS CORPORATION **115 Velie Place, Moline, Ill.**



$1135

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For 1917

YOU WILL PROBABLY REMEMBER that last year there appeared at the New York Show a little Scotchman by the name of Fergus, with a car that was the wonder of the whole show. That car was also called the "FERGUS," after its inventor and builder.

DO YOU REMEMBER WHY that car was so wonderful, why it was looked upon by engineer, manufacturer and motorist alike, with the greatest admiration and respect?

EFFICIENT—NEARLY PERFECT—LUBRICATION! That is the answer. To every surface exposed to friction, throughout the whole car, a sufficient amount of oil was supplied, unfailingly.

BUT THE PRICE WAS SO HIGH as to place it entirely out of competition. It was a beautiful demonstration, but hardly a marketable product.

SPILLMAN "8"

THIS IS NOT SO OF THE SPILLMAN MOTOR. Although pronounced by engineers of the highest standing to possess the most efficient lubricating system of any engine now for sale, the price of the SPILLMAN is such as to place it under the hoods of some of the most popular models of the 1917 cars.

NOT ONLY IS THE SPILLMAN LUBRICATING SYSTEM THE BEST, but in accessibility of parts, in efficiency of cooling system, in power, simplicity, and sturdiness of build, the SPILLMAN bears comparison with any motor in the field.

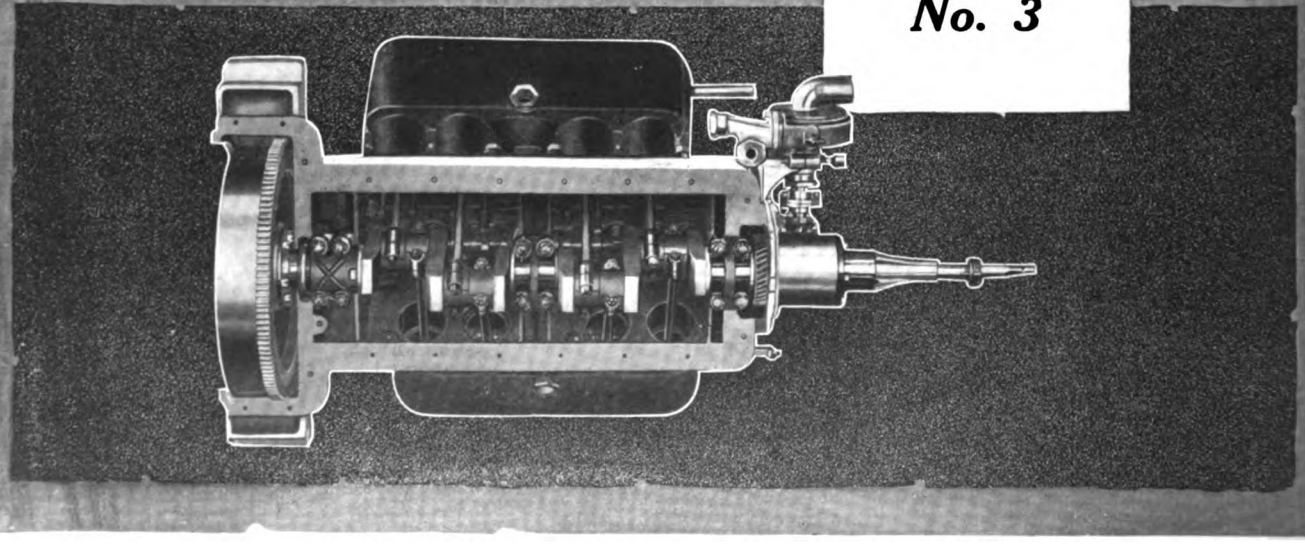
COMPARISON IS EXACTLY WHAT WE WANT. We ask you to compare it **now**, with other engines, before selecting your 1917 line. Your customers will do the comparing later. And their comparison will help you mightily if you select a SPILLMAN equipped car to sell. REMEMBER THAT.

WRITE US TO-DAY FOR A DETAILED DESCRIPTION. It is yours for the asking, will cost you nothing, and will surprise you if you are not already familiar with the SPILLMAN.

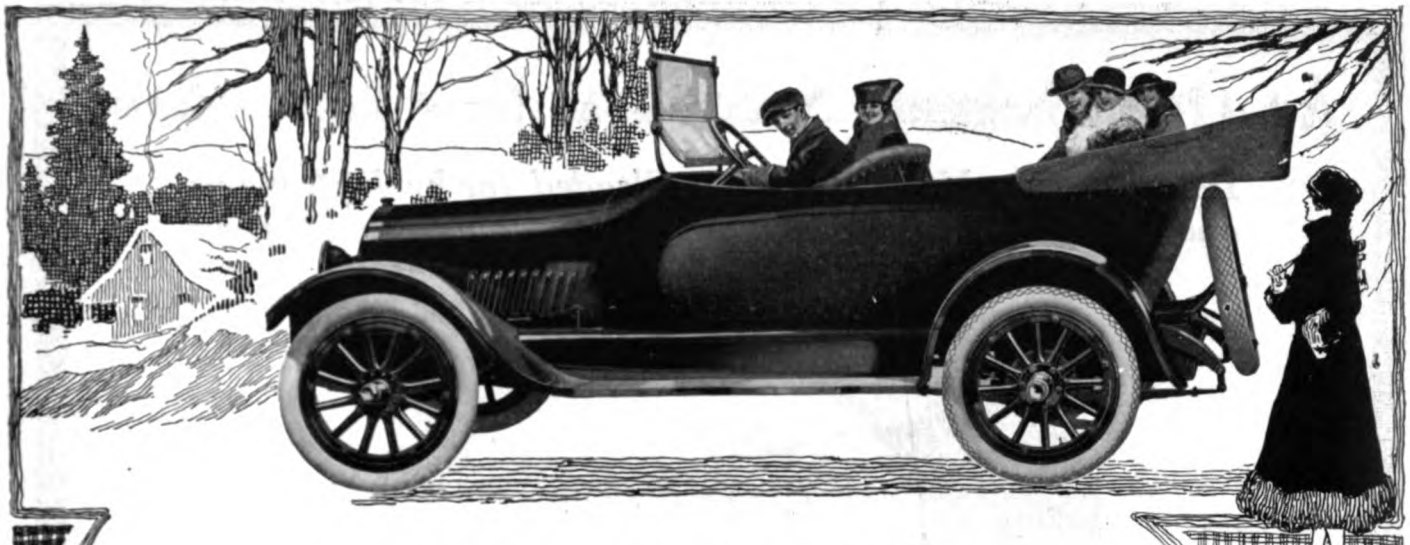
SPILLMAN Motors for 4, 6, and 8-cylinder cars

HERSCHELL-SPILLMAN CO.
NORTH TONAWANDA, NEW YORK

Plain Talks To Dealers
No. 3



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A Colt in Illinois Mud and on Kentucky Hills

Good automobiles, like good horses, must be developed.

Like the thoroughbred, the motor car must show its speed, its stamina, its endurance, before it is ready for blue ribbon competition.

The Stephens Six was tested in Southern Illinois, infamous for its rough and muddy roads, and on the legend-haunted hills of Kentucky, where inadequate motor power, defective carburetion, frame and chassis weakness, and lack of riding comfort—due to poor weight distribution and spring suspension are discovered readily if these faults exist.

Before 1917 production was started, the Stephens Six, in these exacting tests, had to satisfy the Stephens Six engineers that its owners would be satisfied. No defect was too trivial to be overlooked.

A Blue Ribbon Winner at the Motor Show

Kentucky is noted for its thoroughbreds.

Among the hills of the Blue Grass State, the Stephens Six was developed into a winner.

At the Chicago Automobile Show the Stephens Six was recognized by thousands as a car of merit. The lines and finish of the handsome streamline body, the depth and comfort-impressive upholstery, the generous equipment, appealed to the crowds that visited our booth.

Even greater Stephens Six enthusiasm was generated in those motorists to whom the power and flexibility of the sturdy motor and the easy-riding qualities of the car were demonstrated on the road.

These demonstrations are most convincing that the Stephens Six represents supreme value and quality at $1150.

Dealers throughout the country realize this and as a consequence we are appointing agents daily. There is still some territory open, perhaps where you are located and where Stephens Six opportunity is knocking.

TWO MODELS, EACH.....$1150
FIVE-PASSENGER TOURING CAR
THREE-PASSENGER ROADSTER

$1150

FREEPORT, ILL.

STEPHENS MOTOR
Branch of Moline Plow Co.
MOLINE, ILLINOIS
Factory: Freeport, Ill.

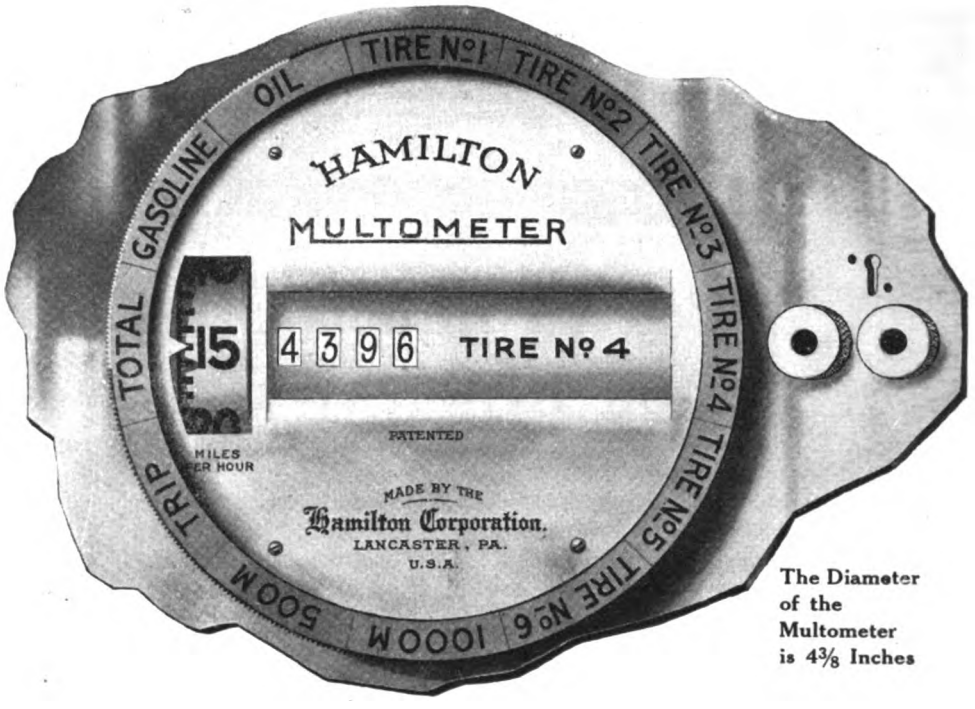
STEPHENS SIX

"The Car With Punch"

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An Overwhelming Success at New York Show

Demanded by Manufacturers—Pleaded for by Distributors and Dealers—Insisted on by Thousands of Car Owners



The Diameter of the Multometer is 4⅜ Inches

Protected by 14 American and Many Foreign Patents

Price

$60

F.O.B. Lancaster

Easily Saved in Tire Adjustments Alone

Hamilton Multometer

Literally Thousands Turned Away at the New York Show —We Could Not Accommodate Them All

The success of the Hamilton Multometer, announced at the New York show, was staggering. Literally thousands of dealers—car owners—engineers—manufacturers—eager to see this wonderful instrument, had to be turned away. We could not find room to accomodate them all.

The demand was overwhelming. In the first three days we could have contracted for many times the number we can possibly build this year. Telegraphic orders—orders by telephone—personal calls from dealers and owners from far away as the Pacific Coast and points in Canada were hourly occurences.

We tried to accommodate every one but we couldn't take care of more than 25% of those who begged to come in just to see the Multometer. And we had to turn down orders for thousands because we could not promise satisfactory delivery.

Hamilton Multometer is the most tremendous success ever registered in automobile accessories. Never has there been such a huge demonstration of immediate approval—never has a manufacturer been compelled to turn down orders by the thousand on the day his project was announced.

Hamilton Multometer answers the question every manufacturer—distributer—dealer—car owner has been asking for years—"How can I keep an accurate record of my tire mileage, my fuel and oil consumption—and in addition, get a positive, accurate register of car speed and trip and season mileage?"

In Hamilton Multometer these big important questions are answered and there is also an automatic warning of what attention is necessary to car at end of each 500 and 1000 miles of operation.

Purchasers literally fought their way into the exhibit of the Hamilton Multometer—literally pleaded for delivery—offered every kind of inducement they could offer to persuade us to put them down for a definite date when we could satisfy their demand. And even the thousands who had to be turned away, went away enthusiastic over the Hamilton Multometer.

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Endorsed by Engineers, Designers, Dealers, Owners as the Most Marvelous Recording Device Ever Built for Motor Cars

The endorsement of Hamilton Multometer is unanimous. Engineers marveled at the wonderful simplicity of the instrument which gives eleven mechanically operated readings and two manually operated readings, but put less strain on the single flexible driving shaft than the ordinary speed recording device which only registers speed, trip and season mileage.

The flexible shaft drive for the Hamilton Multometer operated from either drive shaft or front wheel, turns only one odometer at a time, in addition to the speed indicating device—two-thirds the work done by the average speed recording instrument.

Designers of high grade accessories were absolutely astounded—they could not see, until demonstration had been made to them, how so many readings—such accuracy—such mechanical strength—could be encompassed in such small space.

After they had tried the Hamilton Multometer themselves—studied every reading—witnessed every detail of operation—they said it was the most marvelous recording device ever made.

Dealers from all parts of the country—big distributors who demanded the Hamilton Multometer by the thousand for immediate shipment, said: "It is the most wonderful recording device we have ever seen." "It is a device for which every one of our customers have been clamoring." "We had expected that if such a device were ever perfected, the price would be from two to three times greater than the price you ask for the Hamilton Multometer." "What you have shown us has so greatly exceeded our expectations that we are absolutely staggered."

Motor car owners wired—wrote—telephoned—and called at our exhibit pleading for instruments for their cars.

The ease with which the Hamilton Multometer can be installed in place of the present speed recording device—the fact that no change is necessary in the single, flexible cable drive—made instant appeal, and motor car owners added their unanimous endorsement to that of engineers, designers, distributors, dealers.

We Cannot Possibly Build Enough Hamilton Multometers To Anywhere Near Take Care of the Present Demand

Thousands upon thousands of owners, who want the Hamilton Multometer must be disappointed this year. This is unavoidable. Straining every manufacturing effort—utilizing every inch of space of our greatly enlarged factory facilities—applying the most highly developed manufacturing efforts to production, we cannot possibly build enough Multometers to anywhere near take care of the demand already evidenced.

We will not accept orders until after February 1st. Then, they will be filled in the order in which they are received.

Our distribution will be entirely through the highest grade dealers throughout the country.

At the present time we cannot promise Hamilton Multometers for more than two manufacturers as regular equipment on the cars they build. We are going to divide production as equally as possible.

Manufacturers', dealers' and owners' orders sent to us on and after February 1st will be replied to immediately, and we will set, as closely as possible, the date on which we can make delivery of orders we accept. Do not be disappointed if we have to defer the filling of your order for several months. We are doing all that is humanly possible to do for you.

Every Hamilton Multometer that is shipped away from factory will be covered by our perpetual guaranty of complete satisfaction which remains in force as long as the seal over the Multometer itself is unbroken. That means that every Multometer shipped from the factory will be inspected as thoroughly, as carefully, as completely, as the famous Hamilton Watches

You can afford to wait for the assurance of this high grade workmanship and quality.

Are You the Man We Want as a Dealer?

We are raking the entire country with a fine tooth comb for high grade dealers. Our dealer representation must be the best that it is possible to build up.

We are laying out territory according to the distribution of quality cars — for it is on quality cars that the Hamilton Multometer will find its greatest use.

We are arranging territory for dealers and distributors so that they will get the full benefit of the tremendous demand that has already been registered.

Dealer applications must be considered carefully. It will take us time to decide.

Mail the coupon today. Fill out every question. No coupons will be considered which do not give us all the information we ask for.

Mail This Coupon Today

Hamilton Corporation
Lancaster, Pa.

Gentlemen: Please send immediately full details of your proposition to dealers. I am greatly interested and

could sell at least ..... Hamilton Multometers a year.

Cars handled.....

Accessories handled.....

Territory desired.....

Bank references.....

Name .....

Street .....

Town..... State.....

The Hamilton Corporation, Lancaster, Pa., U.S.A.

Hamilton Multometer, a Recording Instrument of Scientific Accuracy

Hamilton Watch Company Makers of "The Railroad Time Keeper of America"

When writing advertisers please mention Motor World

Digitized by Google

GUARANTEEING OUR SUCCESS—AND YOURS



GOODYEAR products would have an even break on the open market if they were merely as good as the average.

But we believe that no manufacturing concern could start at the bottom, as we started, and go to the top, as we have gone, except by putting out goods that stand head and shoulders above all others.

Temporarily, we could save a lot of money by skimping Goodyear Tires—skimping on quantity of rubber and quality, cutting out our extra plies of fabric, by doing away with our tremendous experimental department, by eliminating the On-Air Cure and by saving in a hundred and one other directions.

But doing these things would make Goodyear Tires no better than others and would stop the upward rush of Goodyear sales—as soon as the public found out that our standard had been lowered.

So we shall continue to do all the expensive things that give Goodyear Tires their extraordinary virtues—because doing these things guarantees the *permanent and unbounded success* of Goodyear and of Goodyear Service Stations.

The Goodyear Tire & Rubber Co.
Akron, Ohio

GOODYEAR
AKRON

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WHY OUR BUSINESS IS UNUSUAL

The Gibson Company does business in an unusual way.

We distribute motor-car accessories and tires throughout the whole United States—and even abroad.

There must be good reasons why dealers—regardless of distance—favor us with their trade. And there *are* good reasons—reasons which long ago brought an expansion of our activities beyond the limited territory of a jobber, into the far-reaching scope, comprehensive stocks and complete facilities of a *National distributor.*

Our business, founded 19 years ago, has become big, because of certain policies—and our reputation for living up to them.

The factors which have won the friendship and trade of dealers are these: Quality, Fair Treatment and Service—plus genuine protection for the legitimate dealer.

We sell to the legitimate accessory dealer and garage operator—and no other.

We carry in stock our own line of high-grade tires and tubes. We have in stock, or instantly available, a complete line of motor car accessories, shop equipment and electrical supplies. No matter what you need—The Gibson Company will furnish it, and promptly. That is SERVICE.

We carry no obsolete, untried or unsalable materials. We catalog only articles which have a known reputation for service and efficient performance, and make our own tests before offering dealers any device or accessory. That insures QUALITY.

We treat every dealer who trades with us just as we should like to be treated—and we deal with all alike. That is FAIR TREATMENT.

Dealers beyond what might be called our "natural" territory are doing an unusual thing in buying their goods from us. They wouldn't do it if we were not giving them something unusual in return. If it is worth while for *them*—isn't it worth while for *you?*

Our new catalog will be off the press early in March. It is, we believe, the most complete and valuable publication of its kind ever offered in the accessory and equipment fields. We will be glad to send it to any legitimate dealer—anywhere! Write for it—Catalog G-2.

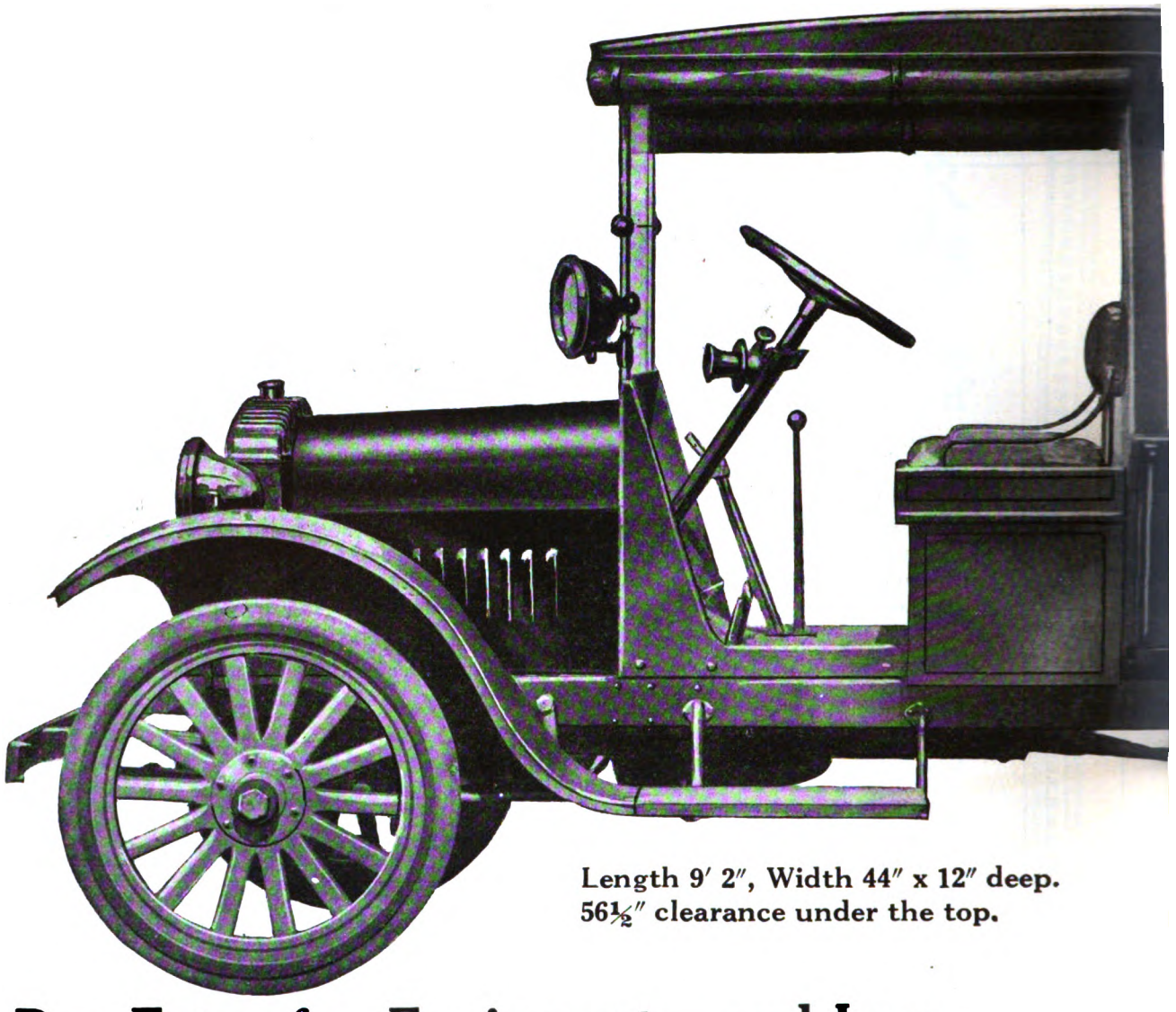
THE GIBSON COMPANY
INDIANAPOLIS



Motor Car Accessories and Tires

Shop Equipment and Electrical Supplies

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Length 9′ 2″, Width 44″ x 12″ deep.
56½″ clearance under the top.

Why Pay Extra for Equipment—and Lose Time Waiting for It—When You Can Buy a Commerce Completely Equipped and Ready for Work?

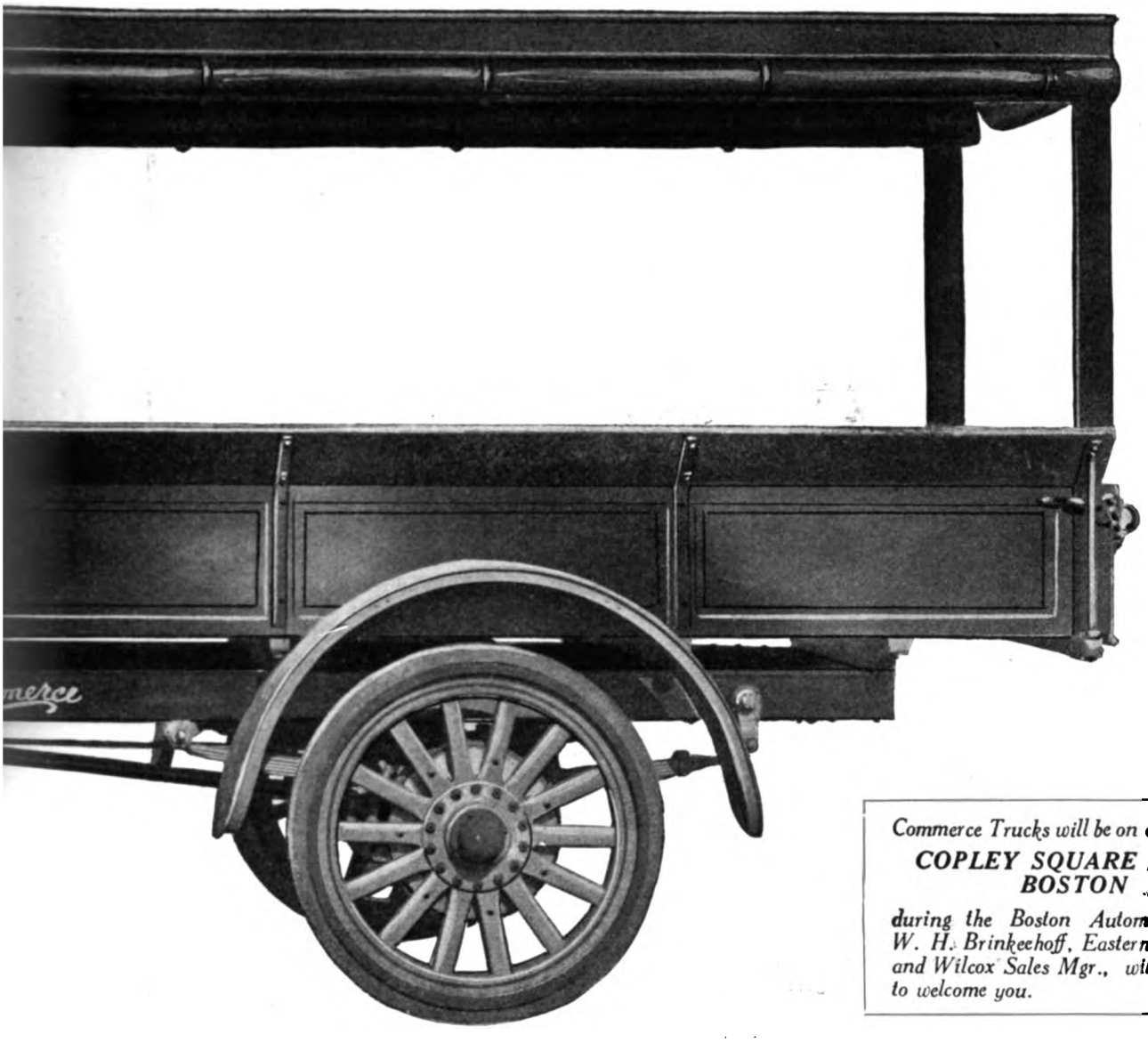
Commerce

ONE TON

MODEL EH
with complete equipment (see opp. page).
Post Top & Storm Curtain.

$1250

Digitized by Google



Commerce Trucks will be on exhibit at the
COPLEY SQUARE HOTEL
BOSTON
during the Boston Automobile Show. W. H. Brinkerhoff, Eastern Dist. Mgr. and Wilcox Sales Mgr., will be on hand to welcome you.

WHILE EXTREMELY VALUABLE and really a necessity to a modern truck, the unusually full equipment carried by every Commerce Truck is only an indication of the extraordinary care taken by its builders to make it in every way the biggest value obtainable.

SEVEN YEARS IN ACTUAL SERVICE have proved the efficiency of the Commerce not only in standing up under hard, continuous delivery service, but in cutting upkeep costs to an irreducible minimum.

WE HAVE NOT IDLY STOOD UPON THE SPLENDID RECORD of this truck, but have constantly added to it every single real improvement that the progress of truckbuilding has brought to light.

ONLY THE HIGHEST QUALITY of material and labor could produce the perfection of design and ruggedness of construction that are contained in the Commerce Truck.

ONLY THE KEENEST FORESIGHT could have so fully equipped it—far in advance of all competitors.

¼-Ton Model, $975. Supplied with 3 types of bodies.

DEALERS: Have you seen the Commerce Method of advertising you in your home towns? Have you seen the SHORT Commerce Contract? Are you in on our "Big Business" campaign for 1917-18? If not, write us TO-DAY for details.

NO OTHER TRUCK HAS ALL THESE THINGS—INCLUDED IN THE PURCHASE PRICE!

COMPLETE EQUIPMENT. Three types of bodies—Windshield—Remy Starting and Lighting—Spotlight—Bumper (integral with frame)—Large Searchlights (with dimmers)—Stewart Vacuum System—Pierce Automatic Governor.

QUALITY UNITS. Continental Motor—Torbensen Internal Gear Rear Axle—Cast Tank Radiator with removable core—Truck Type Roller Bearing Front Axle—Unit Transmission, special truck type—Detroit Steel Products Company Springs.

Commerce Motor Car Company
DETROIT MICHIGAN

W. H. Brinkerhoff, Eastern District Manager, Belmont Avenue, Elmhurst, Long Island, N. Y.

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SUNDERMAN $5

Vacuum Carburetor

$6.50 with elbow for attachment to engine where manifold is not cast in head. (Ford and Metz cars do not need elbow.)

ECONOMY

From the very nature of its mixing principle the Sunderman Vacuum Carburetor must secure fuel economy.

The suction of the cylinders, according to speed, draws gasoline from either or both the low and high speed jets. Automatically, as it inhales this gasoline, it opens the air intake and draws in a whirling draft that meets the incoming gasoline at right angles.

It dashes it against the V-screen, and by the irresistible force of the air cuts every minute bubble of gasoline into infinitely fine particles, resulting in a mixture that is GAS before it leaves the mixing chamber.

Now, mark this well

It makes no difference whether your fuel is high or low grade gasoline, kerosene or distillate—this mode of mixing saves a big percentage of it.

Let us show you how

The ordinary mixture that enters a combustion chamber is exploded in part only—the remainder just burns—and carbonizes. Thus the power impulse received is WEAKER than if ALL the mixture exploded. To secure a given requirement of power you must, therefore, use more gasoline. Isn't that simple arithmetic? To say nothing of the reduction of power that comes from the increase of carbon deposit.

The Sunderman mixture is all gas

pure, dry and light, and all of it explodes the INSTANT it reaches the combustion chamber, thus giving to the piston all the power that is contained in exploding gasoline. Carbon, therefore, is almost impossible, and it needs only common sense to see that from a given amount of gasoline more power is secured with a Sunderman Carburetor, and therefore less gasoline is used to drive the car for a given distance or at a given speed.

That is a simple and logical demonstration of economy, isn't it?

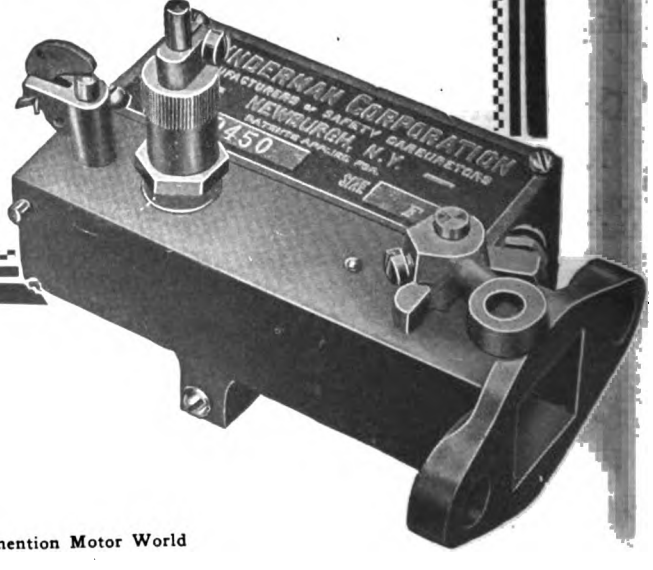
Then let the carburetor prove itself to you.

Good Territory Open—Dealers, Write Now

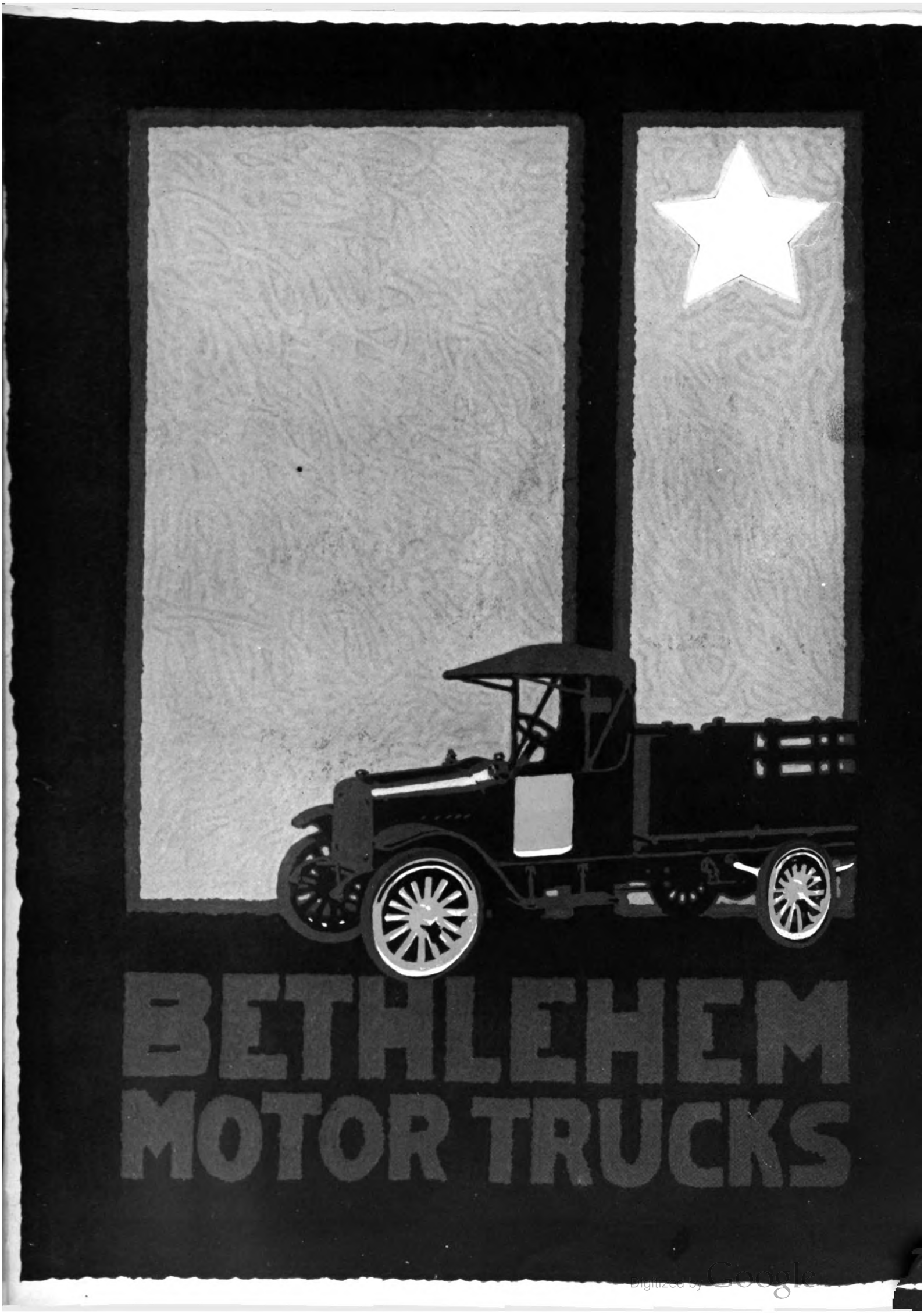
Sunderman Corporation

9 Chambers Street
Newburgh, N. Y.

Western Sales Offices: 403 Kresge Bldg., Detroit



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BETHLEHEM

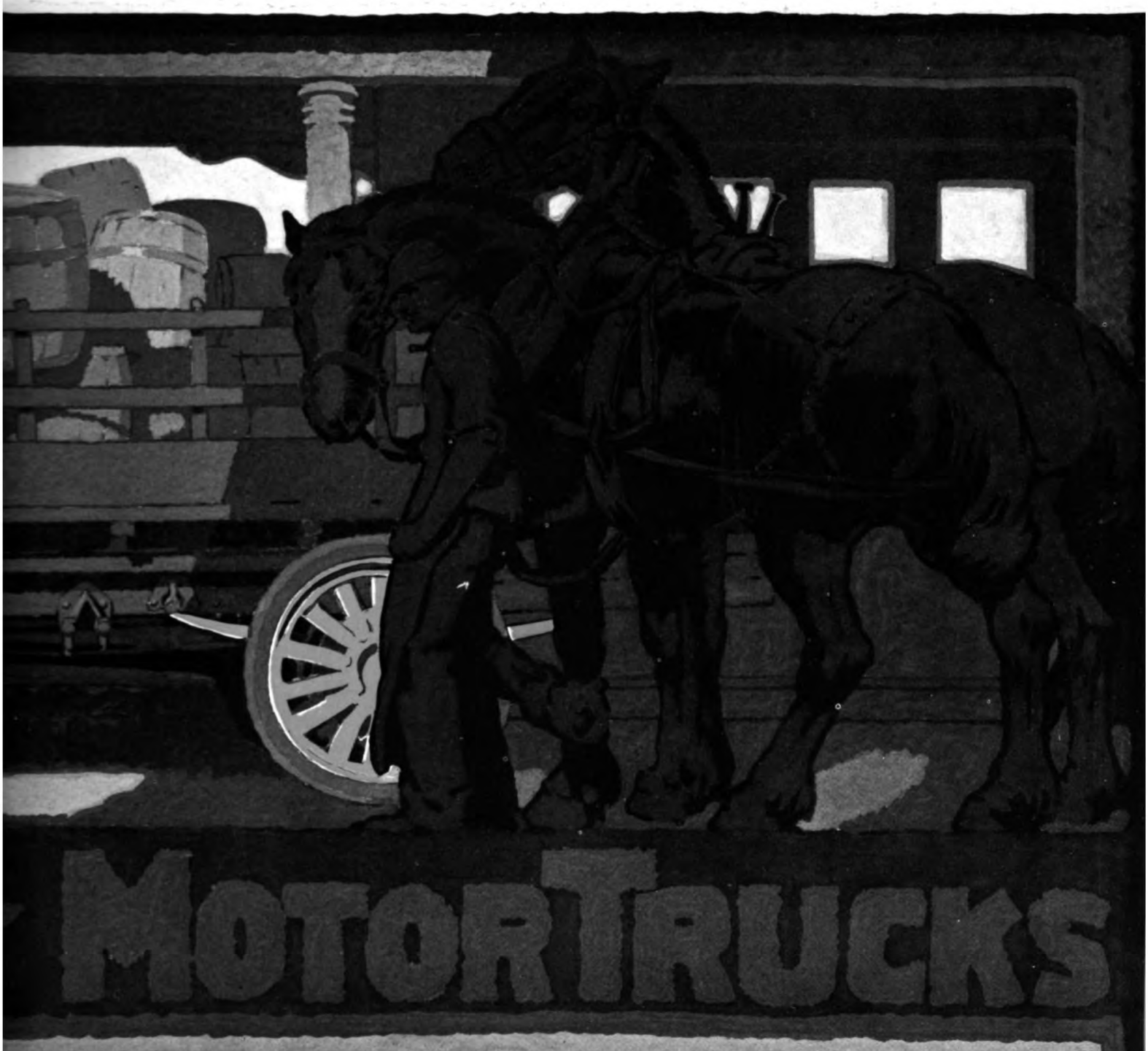
Have been produced for one purpose—to dominate the truck business in *your* territory, and they will accomplish that purpose. It naturally follows that the BETHLEHEM DEALER will be at the peak of the Motor Truck business always. Are *you* to be that dealer?

The Bethlehem dealer in your territory will get the closest selling co-operation possible—every assistance the Bethlehem organization can give—and *his* selling efforts will be promoted

The Bethlehem Motors Corp'n

Make "Bethlehem" Efficiency

Digitized by Google



MOTOR TRUCKS

by a powerful advertising campaign in the national magazines.

The Bethlehem Motor Truck is as near a perfect hauling apparatus as can be produced. The name Bethlehem on a truck means absolute selling satisfaction. What are your facilities for handling it?

1¼ Ton	Complete with body and top over Driver's Seat -	$1,165
1¼ Ton	Chassis Only - - - - - - -	1,125
2¼ Ton	Chassis Only - - - - - - -	1,665

Allentown, Pennsylvania.

Your Selling Asset.

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THE above is a reproduction of the full page advertisement of BETHLEHEM MOTOR TRUCKS to appear in

The Saturday Evening Post	*April 7th*
Collier's Weekly	*April 7th*
The Literary Digest	*April 7th*
The World's Work	*April issue*
System	*April issue*

This advertisement is the first of a series to be used in the Bethlehem sales promotion campaign.

Bethlehem Motors Corp'n

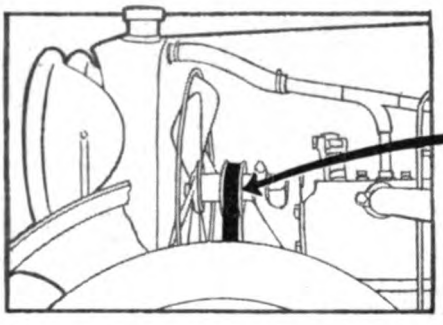
Allentown, Pennsylvania

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Make Good in the hardest tests

HERE IS A FAN BELT that does more than merely stand up under ordinary conditions. You can soak a Wetpruf Fan Belt in oil, or turn a jet of live steam on it, and it will still do its work and do it steadily and faithfully. The leading car builders of the United States use and endorse Wetpruf Fan Belts, which is full assurance that they will satisfy you and your customers.

Wetpruf
Fan Belts





More than 75% of all the transmission leather parts used in automobiles today are made by this company

—including fan belts, cone clutch facings, generator coupling leathers, universal joint boots, knuckle boots, washers, discs and other similar leather parts. All have proven their superiority unquestionably.

These Good Fan Belts Will Also Please You



Triple Stitch

Practically stretchless and very pliable. Made of two plies of high-grade oak-tanned leather stitched with three rows of waxed linen thread. Laps and plies thoroughly cemented together.



Vee Sol

A solid "V" belt made with or without lugs. Accurately cut to angle and size. Flexible, sturdy, and practically stretchless. Made of the highest grade oak-tanned leather. Holds its shape faithfully.



FLAT

Our flat fan belting resists water, heat and oil. Can be cut in any length desired, and made endless with flexible fastener, which we furnish. Laps double-stitched with linen thread.



VEE FLEX

A superior laminated belt for "V" pulleys. Each lamination overlaps the other and is securely riveted. Very pliable and practically stretchless. May be had in either oak or chrome tannage—in continuous lengths or endless.

Write today for Samples and Attractive Prices
(ON YOUR BUSINESS LETTERHEAD)

Hide, Leather & Belting Co.

227-D South Meridian Street INDIANAPOLIS, INDIANA

Digitized by Google

"We split things wide open down there at the races and had the satisfaction of being classed as the surprise of the meet. We are conceded to have the fastest Ford in the world, and I do not think there is any question but what it is."

CHAD W. JEWETT.
Bemidji, Minn.

"This equipment certainly revolutionizes a Ford motor. We have operated some of these cars for a year without ignition trouble of any kind. We can cheerfully recommend the Bosch Equipment to all Ford owners."

J. M. ROBINSON, NORTON & CO.,
J. Edw. Kent, Traffic Mgr.
Louisville, Ky.

"I will say that I am very satisfied with the Bosch Magneto. It makes the Ford run like a small Packard."

Cincy Auto Lamp & Radiator Co.,
Cincinnati, Ohio.

Mr. D E
EVERY FORD OWNER

THERE is no other market so susceptible to concentrated, intensive promotion as the field of Ford owners—there are hundreds of thousands of Ford cars now running and their requirements are identical.

WHAT A MARKET!

Opportunities to sell Ford owners are always presenting themselves, but to be able to offer an accessory that is out of the rut of "something to sell," that is an actual necessity for Fords, obviously is a decided advantage.

Wide-awake dealers, always alive to real opportunities, are now taking full advantage of this unusual one; they are offering the Ford Necessity—the Bosch Magneto, to every Ford owner. These dealers are doing a good business as well as a satisfactory business because Bosch gives such remarkable service and satisfies so well.

The Bosch-Ford Outfit is not a luxury, something added for looks or comfort; it is a necessity—a vital necessity, an investment that makes a good car a better car, makes it run faster, more smoothly, more

"I can start easier on cool mornings than with any of the other systems and run smoother. There is greater elasticity to the engine, absolutely no overheating and can 'pick-up' from low speed without missing a 'shot.'"

J. F. Bergersch.
Lankershim, Cal.

"I would not take $100 for the outfit today if I could not buy another one. It has given me perfect satisfaction in every respect."

J. E. Caudle,
Richmond, Va.

THIS CHAIN OF EVI-

"The magneto has been installed with very little trouble. Our former ignition trouble is at an end. It is indeed all you claim it to be and do. We can start the motor by just a half turn of the crank any time and the motor doesn't heat up."

W. SHENKENBERGER, Supt.
The Volunteers of America, Aquashicola, Penn.

"The present equipment is a revelation and you could not buy mine back for several times its cost, if I could not replace it."

E. U. GRAFF,
Supt. of Schools.
Omaha, Neb.

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"I am very well pleased with the Bosch Magneto which you installed on my Ford car and think it is the best proposition I have seen. My advice to any one buying a Ford car is —*GET A BOSCH.*"

EDWARD M. TOWNSEND.

Philadelphia, Pa.

"It is only fair to let you know that I have driven my car 20,000 miles without giving the ignition system any thought; this is a wonderful relief from the regular equipment of the four individual vibrators, which I consider a constant source of trouble."

J. FRED. WESSLER,
Dist. Supt., Park Dept.
Baltimore, Md.

"They are giving the best results. They never have changed a plug on any of the cars and two of them have been on two years."

S. T. Hutchinson.

Lake Geneva, Wis.

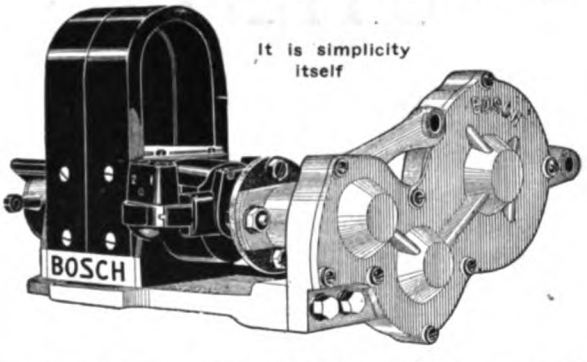
ALER
IS YOUR PROSPECT

economically, and in consequence saves operating, upkeep, and wear and tear bills. It satisfies; the proof is here, here in the links making up a chain of evidence showing it to be a real

DEALER'S OPPORTUNITY

This is no "get-rich-quick" opportunity, no "fly-by-night" scheme to land your prospects, make a quick turn-over and forget it, but it is an opportunity to do a consistent, all year round business at a good profit.

This is the fourth successful season of the Bosch-Ford Outfit. You must take it on now. It means good business now and for the future. Start today.



Write for Literature and Prices

Bosch Magneto Co.
224 W. 46 St., New York

"I have a Bosch-Ford attachment on my car. Would have one if I had to pay $100.00 for it."

Dr. Purdy,

Mt. Vernon, N. Y.

DENCE PROVES IT

"I find that I have no trouble whatever in starting either in warm or cold weather. I have more power on either 'Low' or 'High,' also a considerable saving in gasoline consumption. I am not bothered with the old trouble of adjusting the coils."

JOSEPH BICE, Master Mechanic, The Mass Consolidated Mining Co.

Mass, Mich.

"I have used the Bosch Magneto for the past year on my Ford car, and it has given excellent service. The Bosch Magneto eliminates starting troubles, increases speed and saves fuel. I consider it a necessary improvement on Ford cars."

HENRY MAYER, Fire Marshal.

Bloomington, Ill.

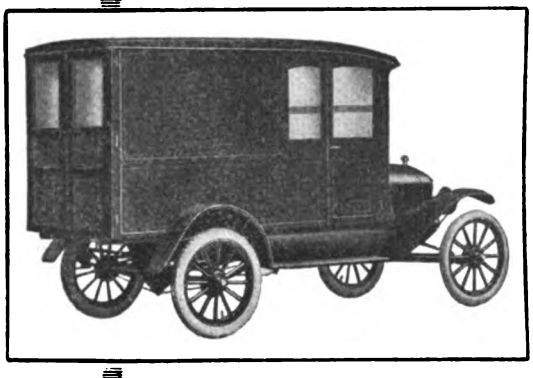
"Noting your adv. in 'Farm Journal' will say my experience confirms your claim that your magneto will make a Ford develop more power."

F. W. Fenn,

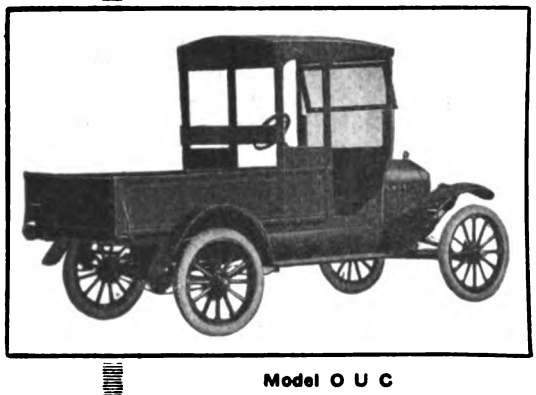
Coffeyville, Kansas.

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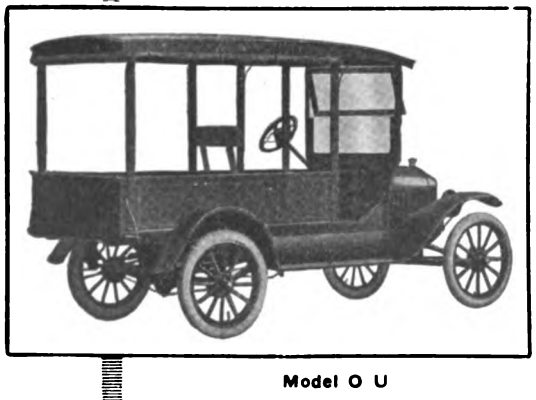
Here is some news of great importance to Ford and other light-car dealers.



Model F U V
Panel Body with completely enclosed cab



Model O U C
Open body with covered cab



Model O U
Canopy-top body, with side curtains
Other types of body for every purpose

HIGHLAND

THE

World's Standard Commercial Body

HIGHLAND bodies help greatly in the sale of light delivery cars. For the buying public knows that for twenty-five years a Highland body has stood as the synonym for strength, style and suitability.

We have had hundreds of requests from dealers whose customers wanted Highland style and sturdiness, but whose price-limit made them willing to do without a few of the extra refinements of detail.

To meet this widespread demand, we are announcing the

HIGHLAND UTILITY LINE

Here's a line of commercial bodies with the inbuilt Highland durability, with all the Highland superiority of design and construction.

It's the big-market line. And by greatly increased production, by eliminating refinements here and there that the average buyer does not need, we are able to price it at a figure that enables the Highland dealer to meet the competition of the makeshift body.

The standard Highland line—the finest commercial bodies it is possible to make—will be continued. The combination of the two lines gives Highland dealers the inside track on every part of the market. And we have in addition some special features of co-operation that will help you sell more cars.

Write today for details—we can help you to the leading position in the light-delivery field in your town.

Highland Body Manufacturing Co.

221 Elmwood Place, Cincinnati, Ohio

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Protected!





3.25

$4.50 In Canada

No Thief or Joy-Rider Can Steal This FORD.

It's Protected by a

Goodrich
YALE LOCK AND SWITCH

FOR FORDS

Price - $3.25
($4.50 in Canada)

The beauty of the Goodrich Yale-Equipped Lock Switch is that it gives you nothing extra to do, or to remember. It is merely a new ignition switch for your Ford that fits perfectly (screws, screw holes and all) in the place of your regular Ford switch.

When you turn the key you switch off your ignition and at the same time lock your switch in the "off" position.

Not only that, but the same turn of the key pushes the metal guards (shown in illustration) over the screwheads, so that the switch cannot be removed with a screwdriver.

And the lock itself cannot be "budged"! It is absolutely unpickable. It is a modern *Yale* lock of the best description.

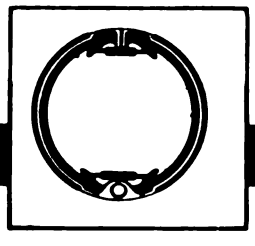
Don't take any more chances of losing your car. Buy a GOODRICH Yale-Equipped Lock Switch to-day. For sale by all good dealers. If your dealer is out of them, write us direct.

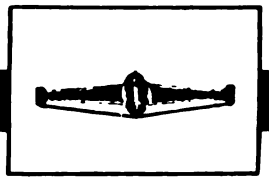
GOODRICH-LENHART MFG. CO.

Succeeding Goodrich Accessory Association

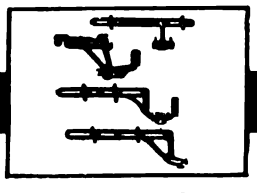
1119 Widener Building, Philadelphia, Pa.

Lined and unlined Brake Shoes for Fords.

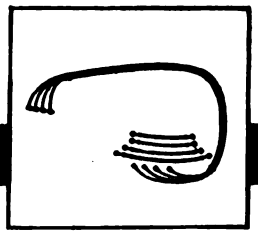




Truss Rods



License Brackets



Ignition assemblies for Fords.

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A Big Chalmers Year

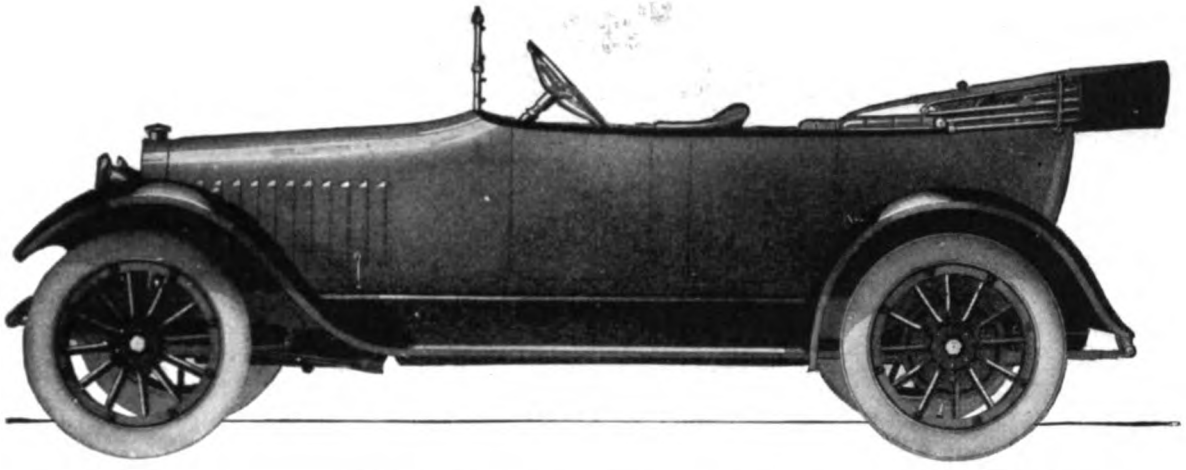
Big in number of cars built. Big in volume of sales. Big in profits for dealers.

Chalmers starts the year right. With a strong organization, planning great things. With a sound and sensible car; popular in the cities; popular in the suburbs; popular on the farms. With an exceptional line of closed cars including all the well known types of bodies.

The Chalmers cars today combine the sturdiness required on the farm with the style

CHALMERS · MOTOR · CO. Detroit, Mich. U.S.A.

Digitized by Google



required on Michigan Boulevard in Chicago and Fifth Avenue in New York. And the prices were never before so inviting.

Ambitious dealers in rural districts will find a Chalmers connection very attractive just now and extremely profitable in years to come.

It is a big Chalmers year.

Present Prices

Five-passenger Touring - - -	$1090	Seven-passenger Touring - - -	$1350
Two " Roadster - - -	1070	Seven " Limousine - - -	2550
Seven " Touring Sedan - -	1850	Seven " Town-car - - -	2550

(All f.o.b. Detroit)

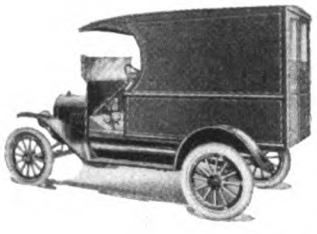
CHALMERS MOTOR CO. Detroit, Mich. U.S.A.

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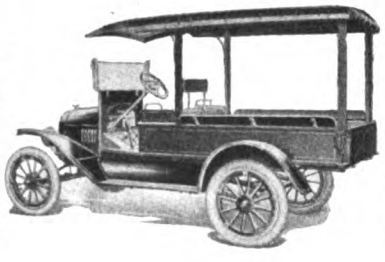


A Ready Demand In Your Own Town



Here's a line of Commercial Bodies for Ford Cars that's a real "Bell ringer" for big business.

It is complete, attractive, popular —with an established reputation in every community—a ready demand.



HENNEY COMMERCIAL BODIES For FORD Cars

"Hit the high places" in originality of design, beauty of finish and quality construction.

Our 1917 line embraces a variety of styles especially adapted to every demand of your trade.



OUR PRICES ARE RIGHT

Quick Service—Low Freight Rates to Your City

We are able to fill orders on short notice from the following branches nearest to you, where stocks of HENNEY BODIES are carried:

Kansas City, Mo.	Los Angeles, Cal.	Moline, Illinois
Omaha, Neb.	Salt Lake City, Utah	Bloomington, Ill.
Minneapolis, Minn.	Poughkeepsie, N. Y.	Portland, Ore.
Dallas, Texas	Oklahoma City, Okla.	Sioux Falls, S. D.
St. Louis, Mo.	Minot, N. D.	Des Moines, Iowa
Stockton, Cal.	Columbus, Ohio	Atlanta, Ga.
		Denver, Colo.



We will be pleased to give you prices f.o.b. Freeport, Illinois. Write us or nearest branch for our dealer proposition.

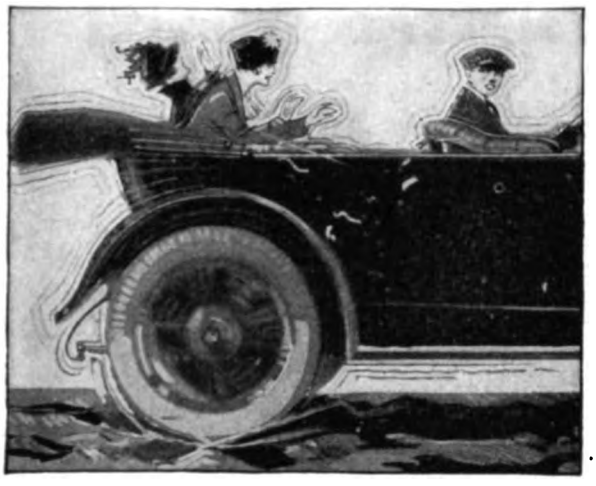
HENNEY BUGGY

BRANCH OF MOLINE PLOW COMPANY

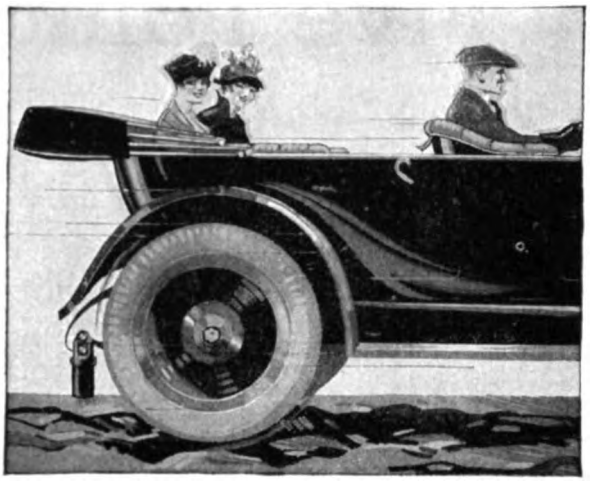
FACTORY: Freeport, Illinois SALES OFFICE: Moline, Illinois

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STONE SHOCK ABSORBERS WILL WIN TRADE FOR YOU



This Car is NOT Equipped with



This Car IS Equipped with

STONE

SHOCK ABSORBERS

Motor Car Owners Will Get Much More Mileage from Their Tires by Equipping Their Cars with Stone Shock Absorbers

THOSE sharp, quick jolts that bounce the car off the road and gouge pieces of rubber out of the tires, that break springs and take the pleasure out of motoring in general, are turned into a gentle, pleasing, undulating motion that adds to the pleasure of riding, by Stone Shock Absorbers. Everywhere motor car owners are getting much more mileage from their tires and reducing spring breakage from 70 to 90 per cent by equipping their cars with Stone Shock Absorbers. This complete satisfaction means profitable friends who will spread the news of the satisfactory service you have given them. And don't forget that despite their low price there is a good profit in them for you.

A Big Demand for Stone Shock Absorbers

The demand for Stone Shock Absorbers is developing more strongly than even *we* expected. Dealers everywhere are telling us of the hundreds of motor car owners who are equipping their cars with these Shock Absorbers in their vicinity. Motor car owners who have seen our advertisements appearing in all the leading motor publications are writing direct to us asking for particulars and who the dealer in their city is.

Cash in on this demand. Don't let other dealers get this business away from you. Be ready first. Write today. If your jobber cannot supply you, write direct to us.

$12

A SET

Why We Can Sell the Stone for $12

"How are you able to sell your Shock Absorbers at the price you do?" we are often asked by dealers and motor car owners. Using the best possible materials and skimping in no way, the following five things make this possible:

1—Scientific construction. 2—Large buying power. 3—Heavy production. 4—Cost-saving efficiency. 5—A fair profit to the maker, based on how little the Stone can be sold for, not on how much we can get for it.

The above five reasons explain how we have been able to prove that $12.00 is enough to pay for a shock absorber. To prove this conclusively we need only refer you to any one of the thousands of satisfied users of Stone Shock Absorbers.

Bigger Business, Better Profits for Stone Shock Absorber Dealers

Made and Guaranteed by **UNIVERSAL RIM COMPANY** Makers of the Baker Rim

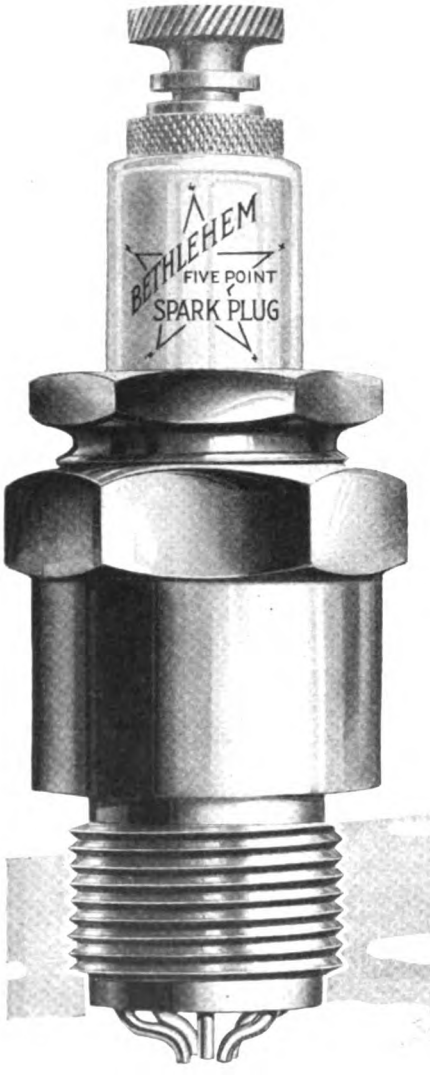
Dept. 89, 1502 Michigan Ave., Chicago, Ill.

(57)

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BETHLEHEM

Five Point Spark Plug

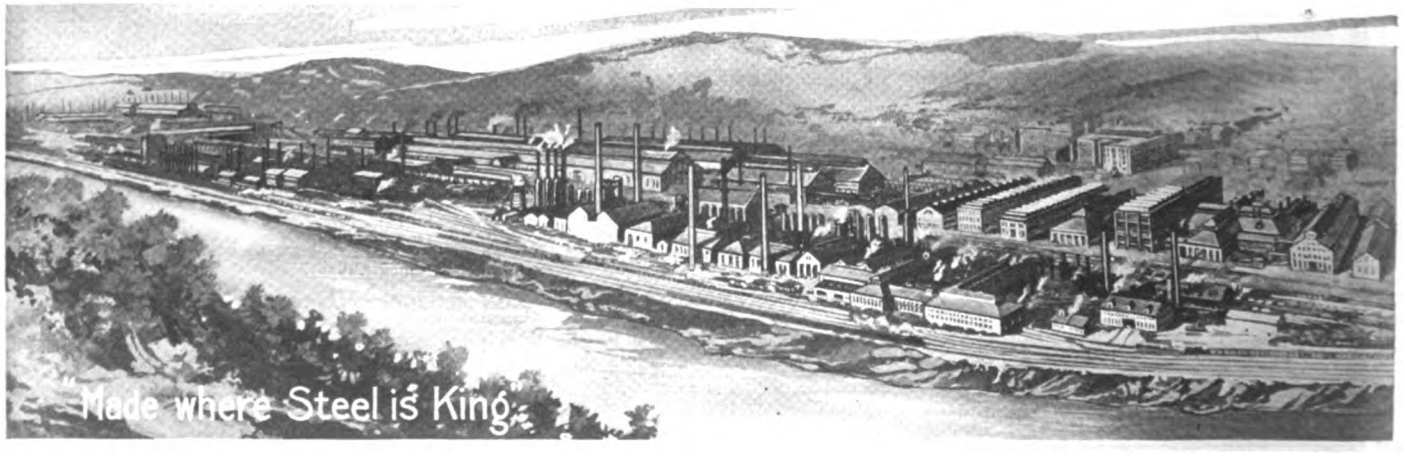


THE one topic of interest to the spark plug world. The Bethlehem 5-point plug sets a new standard of quality in spark plug construction—and a new pace in spark plug advertising and dealer co-operation.

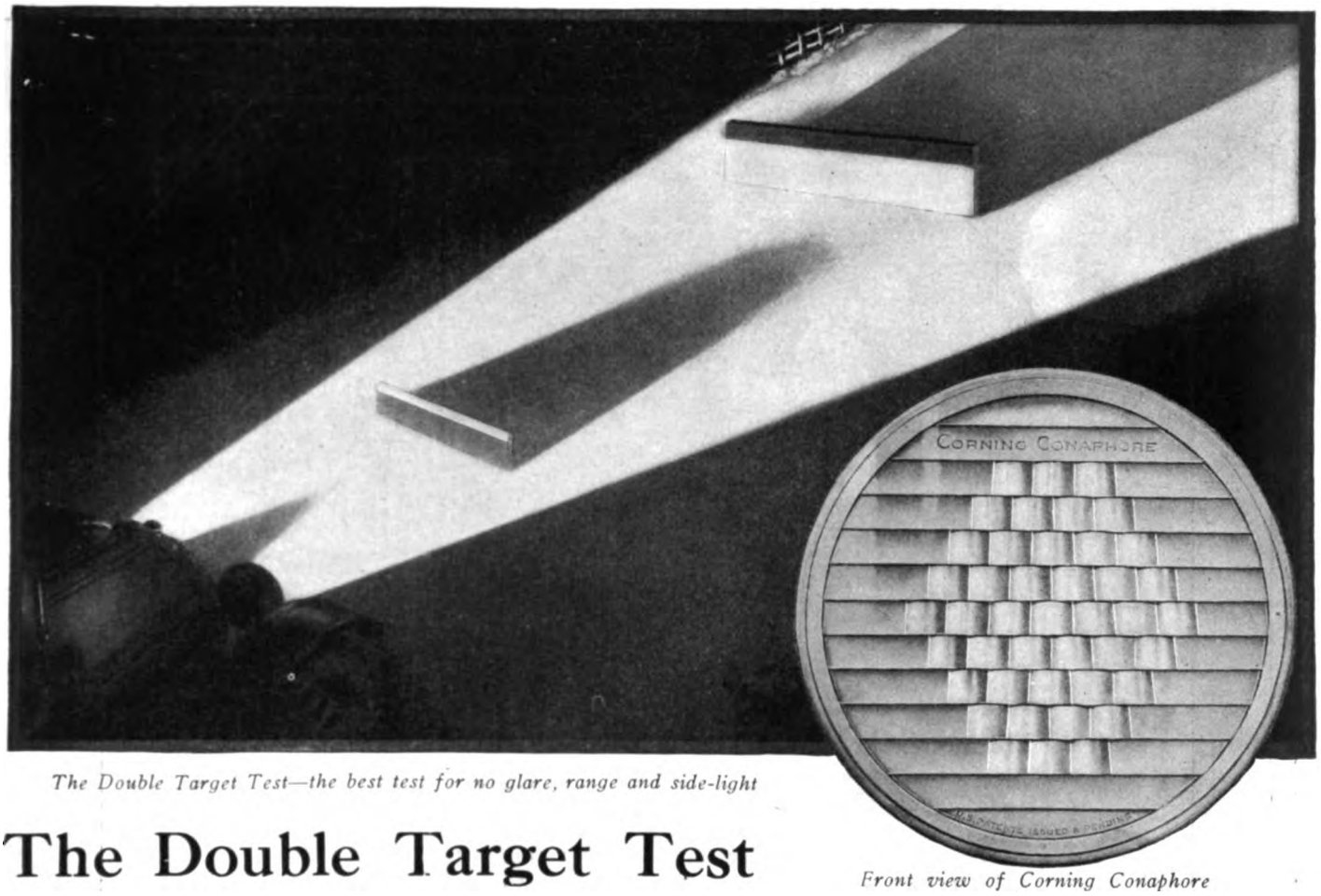
Write for new dealer proposition

Guaranteed for the Life of Your Car

THE SILVEX COMPANY
BETHLEHEM PRODUCTS
SOUTH BETHLEHEM, PA.
E. H. SCHWAB, President



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The Double Target Test—the best test for no glare, range and side-light

Front view of Corning Conaphore

The Double Target Test

The Only Headlight Glass That Passes It

THE Double Target Test is the most important test of headlight efficiency. It is the best test for no glare, range and side-light. Only one headlight glare passes this test—the Corning Conaphore, a new invention manufactured by the Corning Glass Works.

How the Test Is Made

Two targets are placed on the road in front of a car.

The first target is 22 inches high and 10 feet from the car. The second is placed beyond the first one, 30 feet from the car. It is about 4½ feet high and a horizontal line is drawn across it 42 inches from the road.

The intense beam from the Corning Conaphore shoots over the first target and completely illuminates the second target below the 42-inch line.

Other headlight glasses designed to prevent glare, dump the light right in front of the car, completely illuminating the first target, but throwing only a faint light on the second.

The Corning Conaphore *does not dump* the reflected light in front of the car where it is not needed, but shoots it out in a low, wide, strong beam. It gives 500-foot range, with ample side-light and no glare.

A New Invention

The Corning Conaphore has a smooth outer surface and a series of patented horizontal corrugations on the inner face. This design bends down the light rays and shoots them out in a long, intense beam, never more than 42 inches above the road, giving wonderful range and ample side-light, but no glare.

Noviol Glass Causes Light to Pierce Fog

Corning Conaphores are made of a new patented glass — Noviol Glass. This is a golden-tint glass which gives the Corning Conaphore a distinctive appearance.

Noviol Glass causes the beam of light to pierce fog or dust and eliminates back-glare. It makes the green along the roadside stand out. No ordinary headlight glass has these features. Noviol Glass is controlled by the Corning Glass Works.

Made in Two Kinds of Glass

Corning Conaphores are made of clear glass as well as Noviol Glass. Clear glass Conophores are equally efficient in giving long range and eliminating glare, but lack the added advantages possessed by the Noviol Glass of eliminating back-glare and penetrating fog or dust. We strongly recommend the Noviol.

Easy to Install

You will find the Corning Conaphore easy to install. Simply take out the glass now in your headlight and put the Conaphore in its place. Sizes are made to fit all cars. In ordering give name, model and year of your car, and diameter of your present headlight glass. All progressive dealers now sell Corning Conaphores. Put a pair on your car today.

Price List

Noviol Glass	Per pair	Clear Glass	Per pair
3 to 4⅞ ins. incl.	$1.30	3 to 4⅞ ins. incl.	$0.80
5 to 6⅞ ins. incl.	2.40	5 to 6⅞ ins. incl.	1.60
7 to 8½ ins. incl.	3.50	7 to 8½ ins. incl.	2.50
8⅝ to 10 ins. incl.	4.50	8⅝ to 10 ins. incl.	3.00
10⅛ to 11½ ins. incl.	6.00	10⅛ to 11½ ins incl.	4.00

Prices 25 cents more per pair west of Rocky Mts. Sizes vary by steps of ⅛ inch.

Nation Wide Advertising

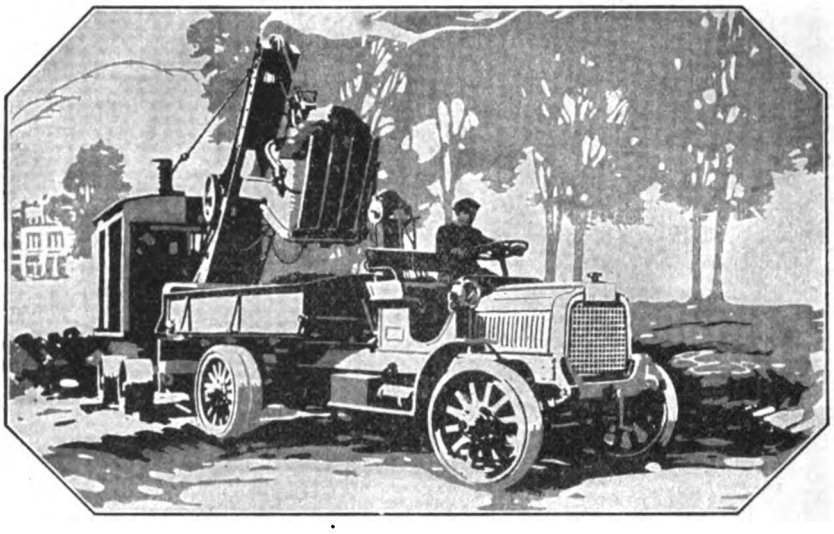
A progressive national advertising campaign for Corning Conaphores is scheduled. Full pages in the Saturday Evening Post, Collier's, Literary Digest and motor publications will be used. Already many advance orders for Conaphores are being received. Jobbers and dealers should send in their orders for Corning Conaphores at once to insure early delivery. Write for 1917 proposition.

CORNING GLASS WORKS
Corning, New York

Corning Sales Division
Edward A. Cassidy Co., Inc., Managers
538 Foster Bldg., 40th St. & Madison Ave., New York City

CORNING CONAPHORE

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These Dealers Sell A Truck Nearly Every Day

There are several dealers in the organization of the United States Motor Truck Company, some of them in unpromising territory, who have for some months been selling U. S. trucks at the rate of from 200 to 300 a year.

Sales like this are possible only with a truck of the highest excellence in design and construction.

For it is business based on quality, and not on price.

The eight year record of the U. S. truck in the hands of owners also has proved that it is, without exaggeration, "one of the five best trucks built in America."

There are some territories still open which offer possibilities as great as those now occupied by the most successful U. S. dealers. Even the smaller ones are very interesting.

U. S. truck representation can be given only to high-grade, well financed and competent dealers, but previous truck experience is unnecessary.

Worm Drive, 2½, 3½ and 5 ton. Chain Drive, 2½ and 3½ ton.

The United States Motor Truck Co.

CINCINNATI, OHIO.

U S
FLOATING POWER PLANT
MOTOR TRUCKS

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When they "page" the Firestone user, all nations answer "Here!" For service in the tropics, through the snows, on the boulevards of all countries, Firestone Tires are big factors in the national life. Firestone quality at ordinary price is responsible for the world-wide appreciation which gives Firestone leadership in increased sales. This is the proof back of the Firestone slogan, Most Miles per Dollar.

Dealers: Write for new plan of sales and advertising co-operation.

FIRESTONE TIRE AND RUBBER CO.
Akron, Ohio Branches and Dealers Everywhere

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Nationally Advertised to Motorists. Half sold before you put them in stock.



Dealers:

The Shaler is the only vulcanizer advertised to your customers. You may have heard of other makes but motorists don't know a thing about them. Our advertising is selling hundreds of vulcanizers every day—for dealers who carry them in stock. There is good profit in the vulcanizer itself and you make as big a profit on the repair material necessary as you do on the patches and gums you are selling. Your customers are going to give these profits to some dealer. Why not you? Remember, no car is equipped with a vulcanizer, so the motorist must BUY one somewhere.

SHALER Vulcanizers

They are designed to be carried in the tool box for making emergency tube repairs that are permanent. In addition they mend small casing cuts, which if neglected would let in dirt and water to rot the fabric and cause blowouts. Your reputation for selling good tires will be increased with every customer who cares for his tires with a Shaler.

Every Shaler you sell helps you sell more, because the user tells his friends about the successful results it gives him.

Shaler Vulcanizers retail from $2.00 up. There are models for every need, heated by gasoline, alcohol, steam or electricity. repair shop use.

We also make vulcanizing plants for

Write To-day for Catalog and Terms

Send coupon for our new complete catalog—dealers' discounts, terms for handling Shaler Tourist Vulcanizers.

C. A. SHALER CO.
405 Fourth St., Waupun, Wis.

Canadian Distributors:
JOHN MILLEN & SON, LIMITED
Toronto, Winnipeg, Montreal, Vancouver

Mail Coupon for Catalog!

C. A. SHALER CO.
405 Fourth St., Waupun, Wis.
Please send me new Catalog Shaler Vulcanizers—Dealers' Prices, Terms, etc.

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A Car of the New Construction



For a car of its capacity the Monroe is extremely light. This advantage has been achieved by following the modern method of substituting for mere bulk and weight, more careful design and better materials. The object of this scientific atten ion to light rigid structure is, of course, to secure maximum power with a minimum gasoline consumption, and to permit of large savings in tires and oil.

The basis of this new trend in construction is the Brush patented chassis structure by which the frame is designed to follow closely the body contour. The frame is made deeper than the ordinary frame, and the running boards made part of it. With this structure bodies may be made absolutely as light as will permit carrying the weight of the passengers. The frame, though of lighter stock than usual, supports the structure more effectively and is so rigid and stable that the doors keep their alignment indefinitely and squeaking and rattling of the superstructure after the car has been driven a while is entirely obviated.

The Monroe motor is built on the same principles of light, stable construction and maximum efficiency as the body and chassis. Heavy metal does not necessarily mean power. Quite the reverse is the case with the Monroe; for we have built a light, high speed engine that is as powerful and economical as any on the market. We have done this by taking the utmost care with the design and the selection of materials. The highest grade of workmanship and extreme accuracy is found throughout.

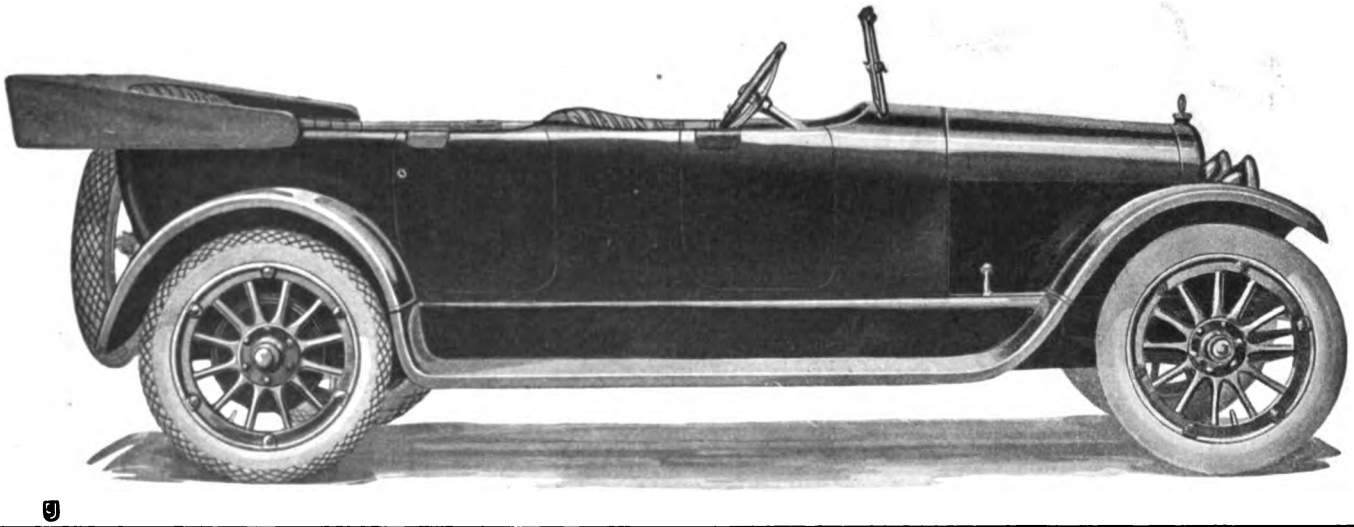
Combined with this scientific refinement of construction you will find in the Monroe Car every standard unit that makes for efficiency and every significant engineering feature which wil add to the service qualities of the Monroe Car It is a car for the most discriminating people. It is a car that will interest dealers who like straight, staple business.

Price, $985 f.o.b. Pontiac.

MONROE

THE MONROE MOTOR COMPANY

PONTIAC MICHIGAN



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SKF
BALL BEARINGS



Copyrighted by Underwood & Underwood

PULSING through the arteries of America's commercial highways—through the crowded narrow streets of the continent—in every corner of the world—you will find the highest grade motor vehicles equipped with S K F Ball Bearings.

This is so because American skill and Swedish steel have been combined to produce S K F "Quality and Service."

S K F
BALL BEARINGS
USED THE WORLD OVER

No matter whether it be in Europe or America, a preference for S K F is shown because of sheer superiority and quality.

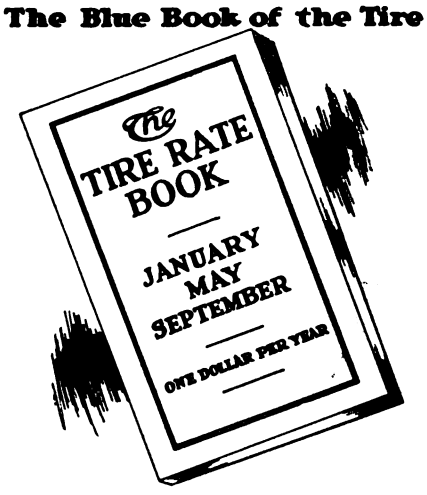
SKF BALL BEARING CO. HARTFORD, CONN.

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The Tire Rate Book

for January is ready for distribution

"The Blue Book of the Tire Trade"



It is the greatest edition ever published—an invaluable guide to those who sell tires.

The features incorporated in this issue are:
90 Pneumatic Tire Price Schedules.
10 Solid Tire Price Schedules.
The Tire Rate Book Standard Telegraphic Code.
The Motor World Guide, containing principal specifications of all U. S. A. cars.
Commercial Vehicle Tire sizes and Rim data covering 75 different makes of commercial cars.
Pleasure Vehicle Tire sizes and Rim data on 197 different makes of cars.

The above information, and more that is both interesting and valuable, comprises the January edition of 176 pages—60 pages larger than the September edition.

Don't delay in mailing your subscription—

Do it now and know (among many other things) **how many tires must be made to equip U. S. A. cars in 1917.**

All of this is to be found in the **January Edition,** 50c yearly; 25c a copy.

Issued January—May—September.

THE TIRE RATE BOOK

PUBLISHED BY

THE CLASS JOURNAL CO.

239 West 39th Street

NEW YORK, N. Y.

Order by Coupon or by Letter

The Tire Rate Book (Published by Motor World),
239 W. 39th Street, New York City.

Enclosed please find $..... for ..... subscriptions beginning with the January, 1917, issue.

Name .....

Address .....

Subscription price, 50 cents per year—January, May and September issues.

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Vesta Indestructible Isolator

Th s apparently simple device adds an extra life to every Vesta Storage Battery. Let us explain fully the very important part it plays in the Vesta. Write today



Vesta Impregnated Wooden Mats

In this exclusive Vesta feature the wooden mats are chemically treated — absolutely preventing "treeing." It also doubles the life of the mats.





A Combination That Makes A Bigger Battery Business

There have been only two battery improvements in years —Vesta Indestructible Isolators and Vesta Impregnated Wooden Mats.

Both of these improvements are exclusive, patented Vesta features—found only in the Vesta. They give Vesta double life. The Vesta Indestructible Isolators positively lock the plates apart and prevent short circuits.

The Vesta Impregnated Wooden Mats positively prevent "treeing." They absorb battery acid as freely as ordinary wooden mats and form a perfect path for the current, yet make it impossible for metallic lead to pass through. Consequently there can be no "treeing" with its consequent disastrous results.

These two exclusive Vesta features, together with the all 'round superior construction of the Vesta, make a combination bound to increase any Vesta dealer's battery business.

VESTA
DOUBLE LIFE
STORAGE BATTERY

Through our newspaper and magazine advertisements we are teaching battery users that Vesta will last twice as long as other batteries and why it will.

Owners are learning the economy and satisfaction of Vesta Batteries. More people are buying Vesta Batteries every day.

A Vesta Service Station connection is a source of big, steady-growing profit to the dealer. You should write for our booklet "Batteries are Different" and information about our Dealers' Service Station Plan. Use the coupon.

VESTA ACCUMULATOR CO., 2103 Indiana Ave., Chicago

VESTA ACCUMULATOR CO.,
2103 Indiana Avenue, Chicago

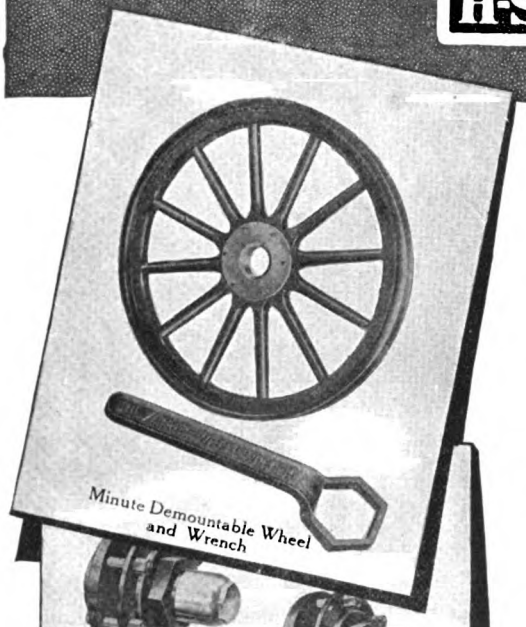
Please send me "BATTERIES ARE DIFFERENT" and details of your SERVICE STATION PLAN.

Name.....

Address.....

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H-S Repair Parts
for Ford and Overland Cars


Minute Demountable Wheel and Wrench


Pr Minute Wheel Hubs—to replace Ford Hubs


H-S Letts Manifold Heater for Ford Cars


H-S Page from Repair Parts Catalogue

"A Tire Changed in 60 Seconds"

THE MINUTE DEMOUNTABLE WHEEL

We believe this the best Ford accessory on the market today because it is the most needed.

"One nut to unscrew—that's all you do"

FEW Ford Owners care to drive without some quick change tire device. Until recently the demountable rim was their only choice. Now at practically the same cost they can have the luxury of cars in the high price class and carry their tire on a spare wheel. Double protection, no soiled hands or clothes, no temper trying prying off of mud and rust encrusted rims, no delays when delays mean a marred trip, a lost appointment—these are a few of the advantages.

Price Only $30.00

Equipment as shown at left. *Send for Booklet—"The Minute Wheel"*

H-S Letts Manifold Heater

Price $6.00

Now in two types for Ford and Chevrolet cars—20 to 40 per cent. more mileage

Without a single exception two years of the most exacting tests proved excess mileage gains over the guarantee. As high as 35 miles to the gallon on a Ford car in an 800 mile trip was made, and three earned for one truck user price of new truck in a year. Reorders coming in from every dealer featuring it. You should send for book, "Mileage," Mr. Dealer, and particulars.

FEATURES:—

- **Saves more than a fifth of gas.**
- **Prevents carbon.**
- **Stops boiling radiators in summer.**
- **Lessens spark plug trouble.**
- **Can be opened to clean—an essential feature for the success of any manifold heater.**
- **Put on in 30 minutes.**
- **Does not alter or interfere with any part of engine.**

Dealer: H-S Accessories and H-S Repair Parts are sold through H-S jobbers. Write for booklets on The Minute Demountable Wheel and H-S Letts Manifold Heater.

H-S Repair Parts—Ford—Overland

Send for catalogue showing over 400 repair parts—the highest quality and perfect fit are guaranteed. Your customers will be glad to know you carry H-S parts. They are nationally advertised. Send to your nearest H-S jobber or write us for his name.

HIGHEST QUALITY H-S PROMPT SERVICE

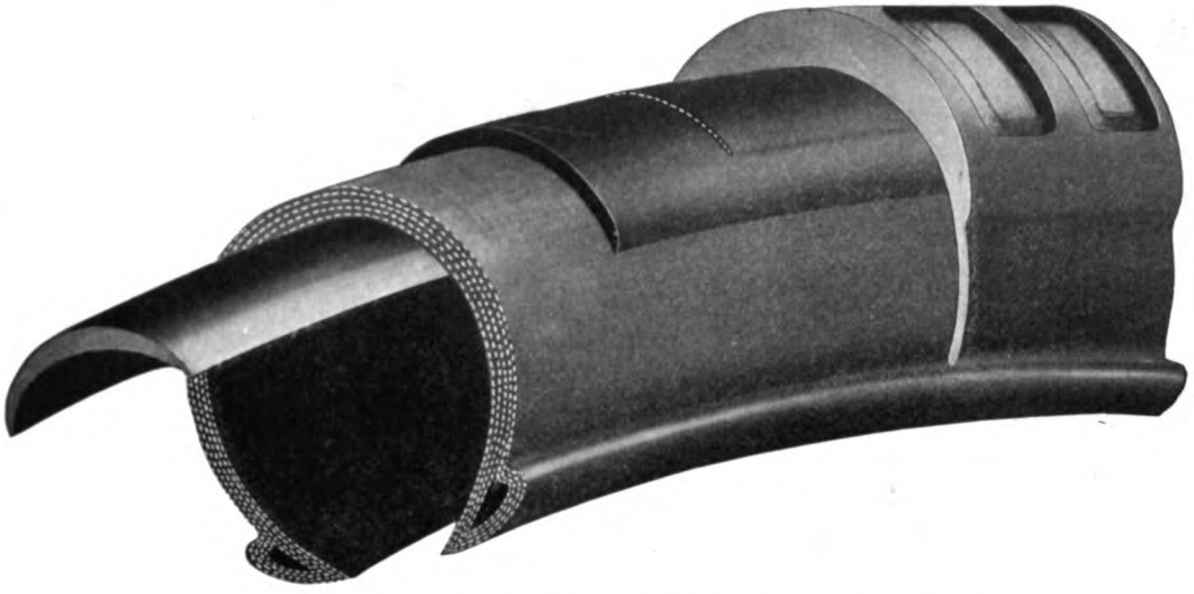
HILL-SMITH METAL GOODS COMPANY

MANUFACTURERS OF MOTOR PARTS AND ACCESSORIES

REPAIR PARTS FOR THE FORD AND OVERLAND CARS

BOSTON, MASS.

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A Fast, Lively, Quality Tire That Is *Also* Puncture Proof

We guarantee the Woodworth Trouble-Proof Tire to run 5,000 miles without puncture or blow-out.

But that is only an *added* reason for buying it.

Entirely aside from its puncture proof qualities, it is one of the most reliable and durable tires ever put out.

WOODWORTH TROUBLE-PROOF // TIRES //

The addition of a specially prepared and perfect fitting strip of chrome leather to the inner side, *after* the tire is made, makes it puncture-proof.

The springy resilience, the light, swift, lively qualities of the Woodworth are noticeable. Its wearing qualities are unequalled.

Dealers sell Woodworth Tires in quantities regardless of what other tires they handle. There is no other tire that will exactly suit the man who is looking for Woodworth performance.

WOODWORTH TROUBLE-PROOF TUBES

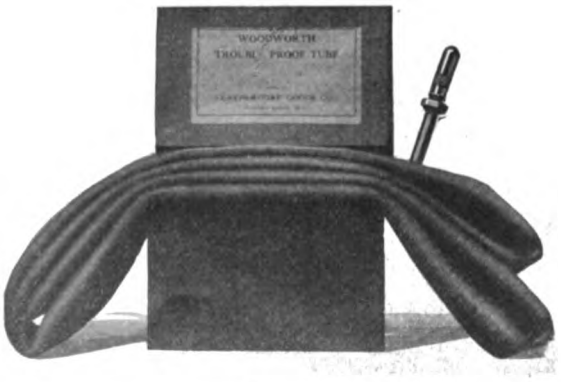
—are finest red rubber, antimony-cured, hand-made, at a fair price. They enable your casings to stand up and deliver their full strength.

We want dealers who are building for the future and who realize that selling a tire that delivers the goods is the tire that means real business for the dealer. Exclusive territory on this remarkable tire and real co-operation is awaiting the dealers we close with.

WOODWORTH MANUFACTURING CORPORATION

Niagara Falls, New York

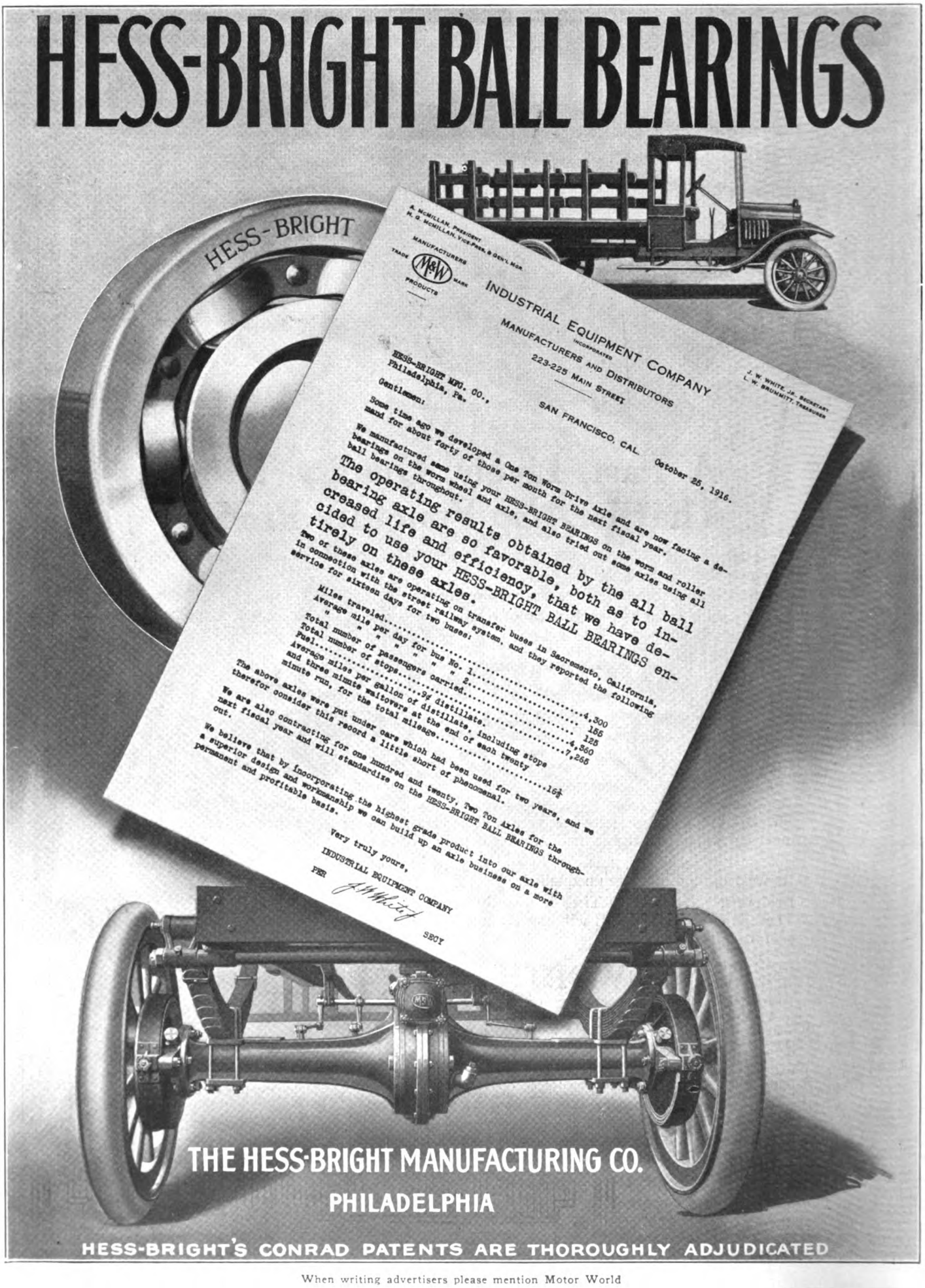
Canadian Factory, Niagara Falls, Ont.



When writing advertisers please mention Motor World

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HESS-BRIGHT BALL BEARINGS



THE HESS-BRIGHT MANUFACTURING CO.
PHILADELPHIA

HESS-BRIGHT'S CONRAD PATENTS ARE THOROUGHLY ADJUDICATED

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Stewart

STEWART'S 1917 TRIUMPH

1500 lb. chassis $795 on easy payments

The 5th year has started big for Stewarts. The scores of Stewart dealers are going strong. Dealer-applications are flowing in with every mail. With the new $795 Stewart, dealerships are at a premium. Wire in your application today.

Complete line of biggest sellers

1500 lb. capacity—chassis	$ 795
2000 lb. capacity—chassis	$1390
1½ ton capacity—chassis	$1485

Easy-payments— (no cost to dealer)

Your customers can now buy Stewarts on an easy-payment-plan which costs you (the dealer) nothing. Ties up neither money nor commission.

$3,000,000 material already ordered

We have already purchased over $3,000,000 worth of material for the coming year. This insures our dealers prompt deliveries.

Prices that insure big sales

75% of all truck requirements lies in the light delivery field covered by the Stewart Line. Stewart low prices insure big turnovers for dealers.

Fairest treatment— quickest service

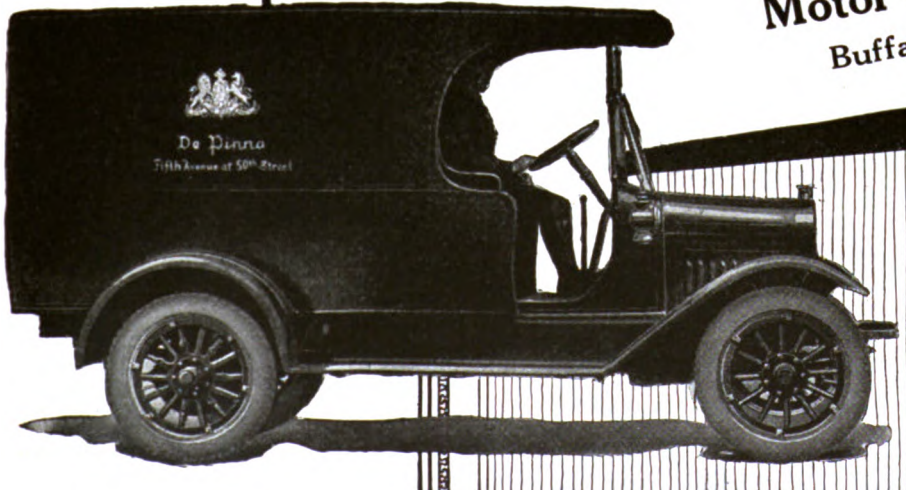
In addition to liberal discounts— real sales assistance — we give dealers one-day service.

5th year 574% increase

574% more Stewarts were sold by our dealers in 1916 than during the previous year. Our output will be tripled for this our fifth year.

Telegraph your application for dealership

STEWART Motor Corporation
Buffalo, New York



QUALITY TRUCKS Stewart QUANTITY PRICES

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AUTOMATIC IGNITION CONNECTICUT



Insure Your Battery Service

CONNECTICUT Automatic Ignition is the best insurance of battery service there is.

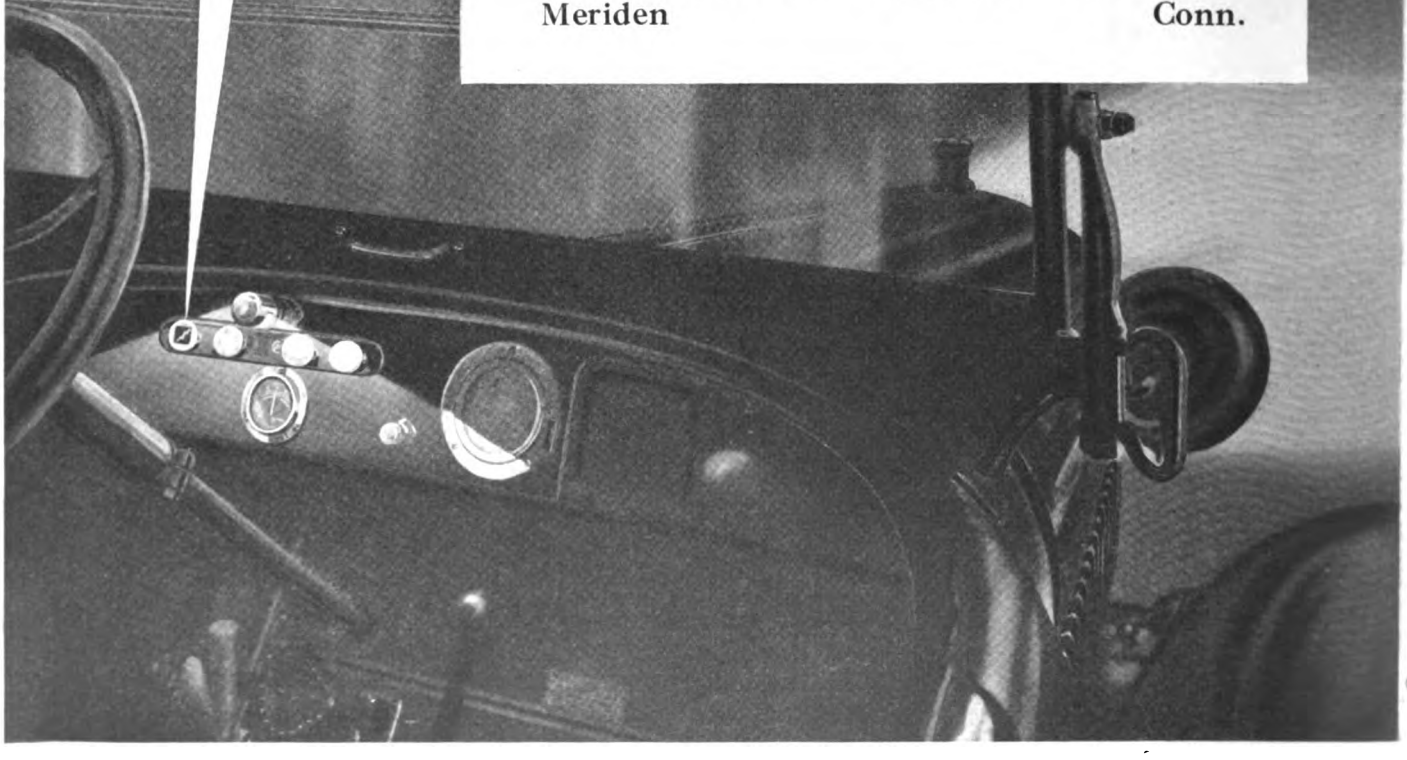
It protects the battery against carelessness.

The Automatic Switch not only turns off the ignition current automatically should the driver neglect or forget to do so, but enables Connecticut Automatic Ignition to deliver such an effective spark for starting that no current is wasted in undue spinning of the motor.

The device shown above identifies this switch and marks the cars equipped with Connecticut Automatic Ignition

This is the "Device of Efficiency"

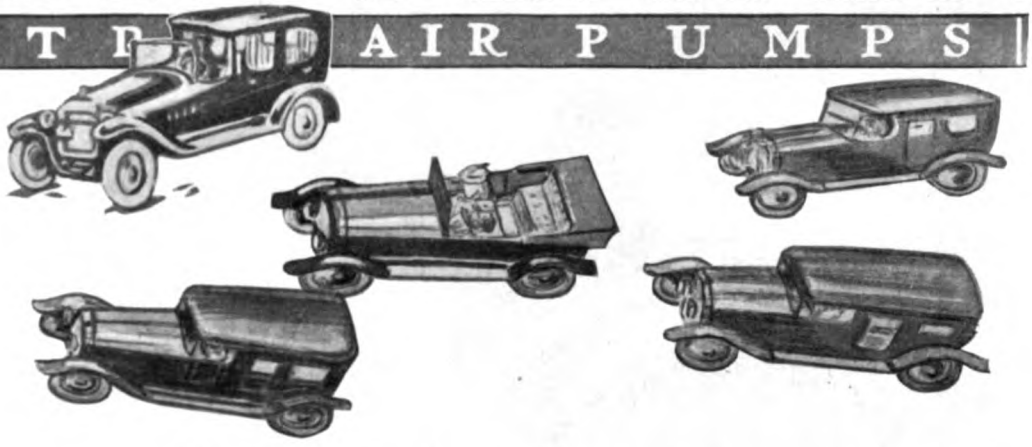
CONNECTICUT TELEPHONE & ELECTRIC COMPANY
Meriden Conn.



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LECTROFLATER

ELECTRIC AIR PUMPS





ATTRACT BUSINESS!

The Lectroflater "Free Air" curb station offers the *surest* method of drawing desirable trade to your door day and night.

Lectroflater curb outfits are self-contained. No tank. No pipes. No leakage. Everything, even the switch, if you wish, is contained in the Lectroflater housing.

To operate, the user merely unlocks the door of the lower compartment (keys are sold, rented or given to good customers or the door left unlocked), takes out the air hose, applies it to the tire, turns on the switch and zip! the powerful Lectroflater pump contained in the upper compartment does the trick in a jiffy.

This outfit will inflate an average sized tire from flat to full pressure in approximately two minutes. The big Lectroflater pressure gauge automatically registers the pressure during inflation. No chance for users to tinker with the pump itself, for this is locked in a separate compartment.

Lectroflater air stations are rugged and massive in design, pleasing and symmetrical in appearance. They are made for outdoor service. Finished in deep green enamel. A massive electric opalescent globe surmounts the station and can easily be seen from a great distance.

Shipped completely assembled. Price $160, f.o.b. Baltimore, Md.

Note These Big Features

Every Lectroflater air station is equipped with a Number 2 Lectroflater pump—the most powerful, quick-acting air pump of its size in the world.

Current consumption, 320 watts. Uses either alternating or direct current from any electric light socket.

Maximum pressure, 150 pounds.

Capacity, 2½ cubic feet of free air per minute.

Cost of pumping average sized tire, one-tenth of one cent (one mill).

Inflates average sized tire from flat to full pressure in two minutes.

Inflates average sized tire from 40 to 80 lbs. in one minute.

Total height of outfit, 8 feet.

Total weight, 650 lbs.

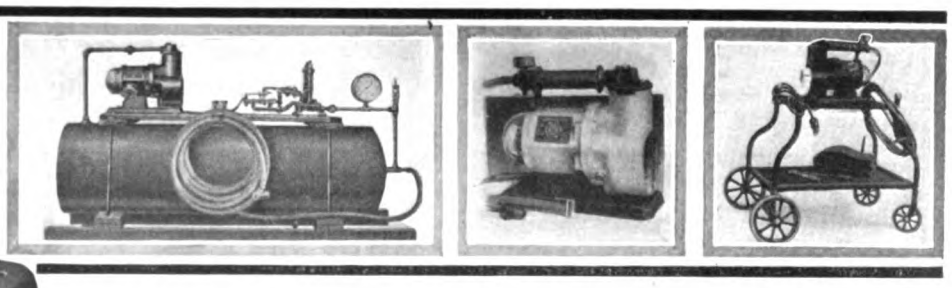
We make other types of curb outfits as well as many types and styles of pumps for inside use, suitable for private garages, service stations, car dealers, tire dealers, etc.

Prices range from $45 up. Write for descriptive literature.

District representatives wanted. Attractive proposition. Write.

THE BLACK & DECKER MFG. CO.

107 SOUTH CALVERT ST. BALTIMORE, MD.



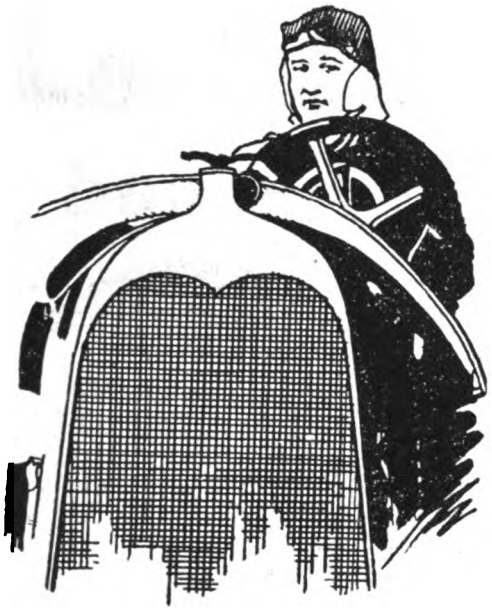
Tank and pump combination with automatic switch completely assembled, price $125.

Model Number 1 for small garages, price complete $45.

Model Number 2, garage pump mounted on movable carriage, price complete $80.

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VICTORIES



Nothing demonstrates the position of FEDDERS Radiators in the American automobile game more clearly than the results of the races. Taking the racing results since mid-summer, we want to call your attention to the performance of cars equipped with

FEDDERS RADIATORS

Here is a résumé of the Fedders' racing record for 1916.

Thirteen "firsts" out of twenty-seven officially sanctioned events. Forty-two "places" finished—and no Fedders-Equipt car was delayed at any time or forced to withdraw on account of cooling trouble.

1916 FEDDERS VICTORIES

CONEY ISLAND CUP RACE, 20 MILES, NEW YORK, MAY 13.

Car and Driver	Finish
Maxwell—Rickenbacher	4
Maxwell—Henderson	5

METROPOLITAN TROPHY RACE, 150 MILES, NEW YORK, MAY 13

Maxwell—Rickenbacher	1

INDIANAPOLIS INTERNATIONAL SWEEPSTAKES, 300 MILES, MAY 30

Maxwell—Henderson	6
Premier—Wilcox	7

DES MOINES 150-MILE RACE, JUNE 24

Maxwell—Henderson	2
Maxwell—Rickenbacher	3
Stutz—Cooper	5

SIOUX CITY 10-MILE RACE, JULY 8

Premier—Wilcox	4

SIOUX CITY 20-MILE RACE, JULY 8

Premier—Wilcox	1

SIOUX CITY 50-MILE RACE, JULY 8

Premier—Wilcox	1

OMAHA 50-MILE RACE, JULY 15

Maxwell—Rickenbacher	2
Maxwell—Henderson	3

OMAHA 150-MILE RACE, JULY 15

Maxwell—Henderson	4

TACOMA MONTAMARATHON, 300 MILES, AUG. 5.

Maxwell—Rickenbacher	1
Maxwell—Henderson	5

CINCINNATI DERBY, 300 MILES, SEPT. 4.

Peugeot—Aitken	1

INDIANAPOLIS 20-MILE RACE, SEPT. 9

Peugeot—Aitken	1
Premier—Wilcox	2

INDIANAPOLIS 50-MILE RACE, SEPT. 9

Peugeot—Aitken	1
Premier—Lewis	5

INDIANAPOLIS 100-MILE RACE, SEPT. 9

Peugeot—Aitken	1
Premier—Lewis	5
Maxwell—Henderson	7

ASTOR CUP RACE, 250 MILES, NEW YORK, SEPT. 30

Peugeot—Aitken	1
Maxwell—Rickenbacher	2

GRAND AMERICAN, 250 MILES, CHICAGO, OCT. 14

Peugeot—Resta	1
Peugeot—Aitken	2
Maxwell—Rickenbacher	3
Premier—Lewis	4
Maxwell—Henderson	5
Premier—Galvin	6

HARKNESS TROPHY RACE, 100 MILES, NEW YORK

Peugeot—Aitken	1
Premier—Galvin	2
Peugeot—Wilcox	3
Maxwell—Henderson	4

VANDERBILT CUP RACE, 294 MILES, SANTA MONICA, CAL., NOV. 16

Peugeot—Resta	1
Stutz—Cooper	2

GRAND PRIZE RACE, 403 MILES, SANTA MONICA, CAL., NOV. 18

Peugeot—Aitken-Wilcox	1
Stutz—Cooper	2

ASCOT DERBY, 150 MILES, LOS ANGELES, CAL., NOV. 30

Stutz—Cooper	2

UNIVERSAL TROPHY RACE, 112 MILES, UNIONTOWN, PA.

Premier—Lewis	2

This showing proves that the FEDDERS is still in its place as the foremost American Radiator

FEDDERS MANUFACTURING CO., INC.

BUFFALO, N. Y.

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BATAVIA

Consider First the Second

IT'S a wise dealer who looks beyond the present and considers first the customer's second visit. For they all come back, some with a grouch and some with a grin.

BATAVIAS

bring them back with the grin.

Batavia tubes, like Batavia casings, are made of high grade, tough, elastic stock, with a wall thickness well above minimum, and are full size. They are built to fight the wear and tear, but when an injury does come—and there never was a tire where it couldn't come sometime—they gain additional virtue by the way they repair. Their free flowing stock insures successful vulcanization.

Batavia products are advertised extensively. They come in attractive packages that show how well their makers think of them. Dealers have exclusive territories.

Do you live in Ohio or Iowa? Then get one of these valuable territories now open:

OHIO
Columbus
Dayton
Springfield
Youngstown
Cleveland

IOWA
Cedar Rapids
Des Moines
Sioux City

THE BATAVIA RUBBER CO.
Factory at Batavia, New York



Fill out the Coupon, Mail it today, and start something

BATAVIA RUBBER CO.
Batavia, New York

Without obligation, tell us why you think we should handle Batavia Tires and Tubes.

Firm .....

Address .....

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HERE IS A MOTOR OIL WITHOUT AN EQUAL!

Absolutely Guaranteed

Autocrat MOTOR OIL

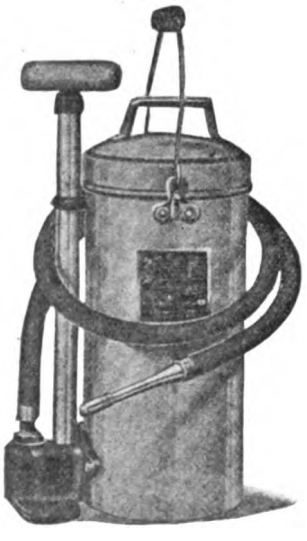
—Positively the highest grade motor lubricant.
—Made by exclusive process from selected Premium Pennsylvania Crude.
—Highest fire test of any pale oil made from a Pennsylvania Crude.
—Lowest carbon content (16/100 of 1%).
—Absolutely no chemicals used in its preparation.
—Free from sulphuric acid or caustic soda.
—The most economical lubricant obtainable for motor use.

Five Grades—
Light and Medium (for pleasure cars);
Heavy (for trucks and air cooled engines);
Extra Heavy (for motorcycles);
Zero (for winter use).

YOU TAKE NO CHANCE IN HANDLING THESE!

Remember that the man with the highest grade oil commands the exclusive, dependable trade. You can guarantee Autocrat and Ebonite as strongly as you please; we will back you to the limit.

PURE PENNSYLVANIA PETROLEUM PRODUCTS



DEALERS:
For a limited time, we are offering this $7.00 Self-measuring Grease Gun free. Write at once for full proposition.

EBONITE
FOR TRANSMISSIONS

The Ideal Gear Lubricant

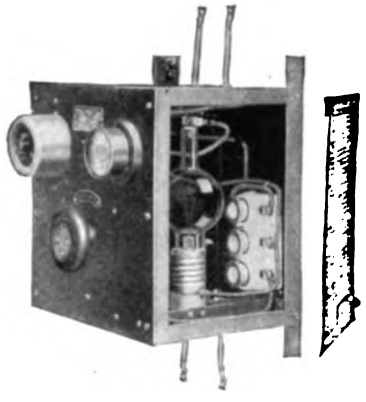
—An all-petroleum gear lubricant.
—Made from highest-priced Pennsylvania Crude ("Franklin Heavy Crude").
—Forms elastic, spongy mass on gear teeth, preventing metal-to-metal contact.
—Never separates. Even when heated to liquid it cools off to its original consistency.
—Will not drip, run, dry or cake.
—Makes gears run smoother, quieter, and longer than any other lubricant.
—Without an equal for transmissions, universals, differentials, timing gears, etc.
—One filling lasts a season!

Bayerson Oil Works, Erie, Pa.

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Tungar RECTIFIER

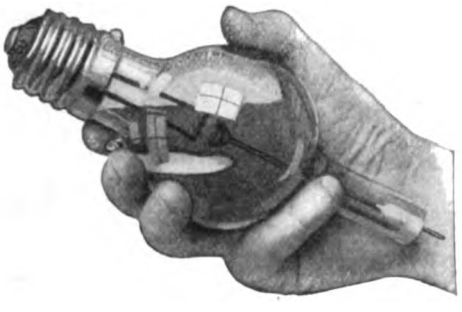
A new battery charger for use with alternating current. Developed by the General Electric Company's Research Laboratory.



6 amp., 75 volt Tungar. Actual size 11 x 11 x 12¼" deep.

This new, 6 amp., 75 volt, G-E **Tungar** Rectifier for charging from one to ten 3-cell batteries from 115 volt, 60 cycle, a. c. supply, is especially adapted for use in public garages or battery service stations. Its low operating cost and high efficiency assures good returns on battery charging business.

The discovery that has made **Tungar** possible is really embraced in this small bulb, in which the process of changing the alternating to direct current takes place.





The smaller Tungars are designed for private garages and fewer batteries.

Ask your jobber or write to the G-E Sales Office nearest you for the booklet you are most interested in.

Booklet 3412 describes the 6 amp., 75 volt Tungar, capacity one to ten 3-cell batteries.

Booklet 3411 describes the 6 amp., 15 volt Tungar, capacity one to two 3-cell batteries.

Booklet 3407 describes the 2 amp., 7.5 volt Tungar, capacity one 3-cell battery.

General Electric Company

General Office: Schenectady, N.Y.

ADDRESS NEAREST CITY

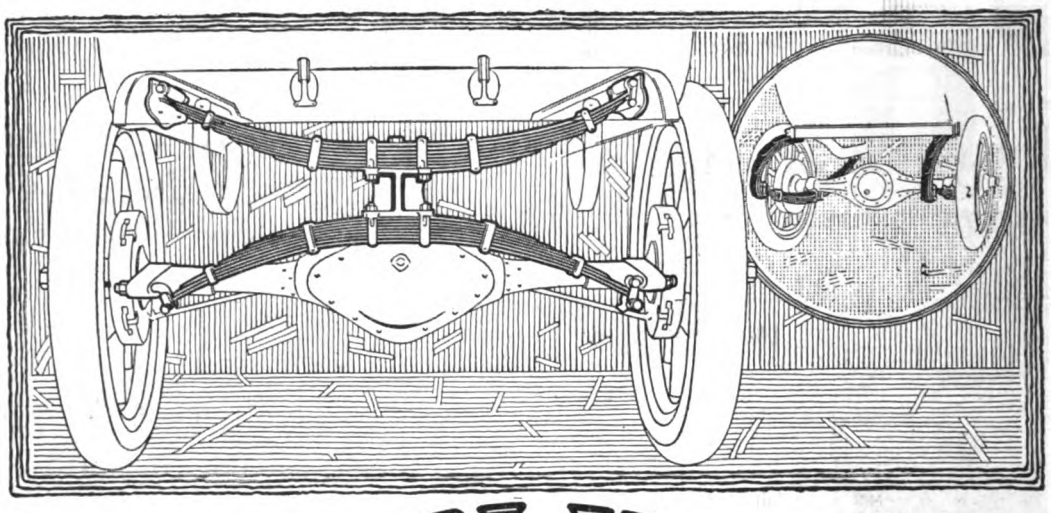
Atlanta, Ga.
Baltimore, Md.
Birmingham, Ala.
Boston, Mass.
Buffalo N. Y.
Butte, Mont.
Charleston, W. Va.
Charlotte, N. C.
Chattanooga, Tenn.
Chicago, Ill.
Cincinnati, Ohio
Cleveland, Ohio
Columbus, Ohio
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Dayton, Ohio
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Erie, Pa.
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*Southwest General Electric Company
†General Electric Company of Michigan.

For CANADIAN BUSINESS refer to Canadian General Electric Company, Ltd., Toronto, Ont.

GENERAL FOREIGN SALES OFFICES, Schenectady, N. Y.; 30 Church St., New York City; 83 Cannon St., London, E. C., England. 6837

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Front
3-point CHASSIS Suspension!
3-section body
Rear

MOLINE KNIGHT

NO VALVE GRINDING — NO CARBON TROUBLE

Front
3-point CHASSIS Suspension!
3-section body
Rear

25% greater tire mileage
Permanently quiet BODY

Over 100 pounds saved in weight
Doors that never stick

Guaranteed the easiest-riding car made!

(FOOLISH QUESTION: "Is an EASY-RIDING car EASY to sell?")

Pick out the roughest city streets and country roads in your locality. Use them to demonstrate that the Moline-Knight, even when speeding, takes them all with *boulevard smoothness!—without jolting passengers either up or sideways!*

Curves can be rounded at high speed *without swaying the car body!* If a wheel is in a deep ditch *doors won't stick.*

The riding effect of a double cantilever spring and of a ten-inch longer wheelbase is gained without the expense and inconvenience of long wheel-based cars. (Moline-Knight wheelbase is 121 inches.)

Over 100 pounds in weight is saved. Tire mileages are increased one-fourth. Body twists are prevented. Thus the **body** is *permanently quiet!*

Its flexible *"Three point CHASSIS suspension"* (same principle as 3-point motor suspension), its 3-section BODY and its wide swung, compound cross-suspended rear spring — *unshackled at the left*—are responsible.

Moline-Knight 50 H. P. Pleasure Car Engines Thrice-Honored

The British Government
(for use in its Canadian war trucks)

The 5th Ave., (New York City) Bus Line
(to replace upwards of 1,000 high-grade "poppet-valve" motors)

The Chicago Motor Bus Co.
(to operate 50 busses over Chicago streets)

—after exhaustive competitive tests, have *all* adopted the 50 H. P. Moline-Knight pleasure car engine (which is used in every 1917 Model "G" at $1840). How's this for selling ammunition with big booms in it?

The greatest car for *easy-riding STUNTS* that you ever saw demonstrated. It's SPECTACULAR!—yet absolutely on the square. Your buyers boost, *boost,* BOOST! The car becomes the *talk of the town. Why not take it on?*

Model "C"—40 H. P.
5-Pass. Touring $1495
4-Pass. Club Roadster 1495
All Prices F. O. B. Factory

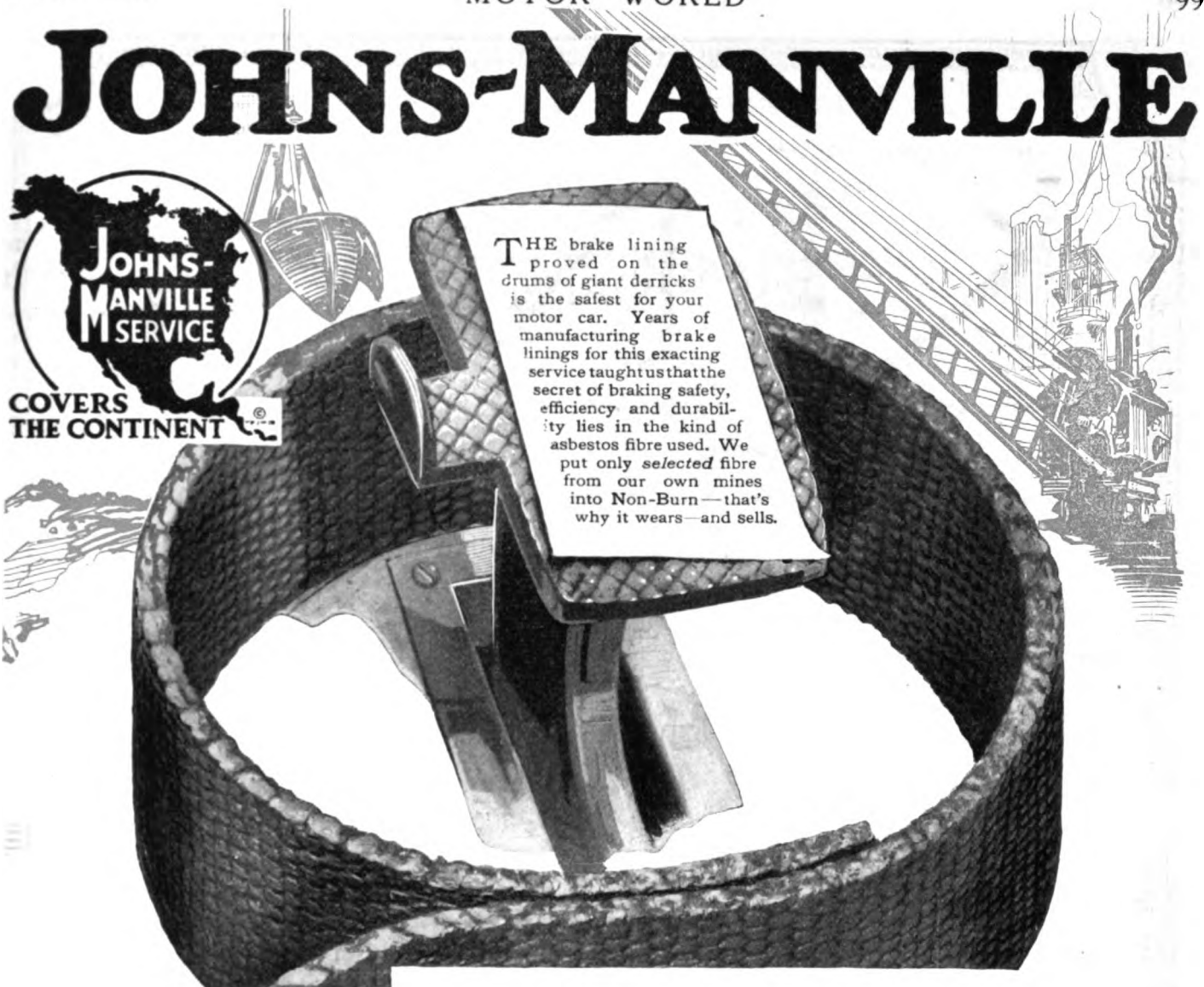
Moline Automobile Company
East Moline, Illinois

In unoccupied territory we want good dealers! Ever hear of a better proposition? Write.

Model "G"—50 H. P.
5 and 7-Pass. Touring $1840
4-Pass. Club Roadster 1840
7-Pass. Springfield Sedan .. 2400
4-Pass. Coupe 2400

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JOHNS-MANVILLE



THE brake lining proved on the drums of giant derricks is the safest for your motor car. Years of manufacturing brake linings for this exacting service taught us that the secret of braking safety, efficiency and durability lies in the kind of asbestos fibre used. We put only *selected* fibre from our own mines into Non-Burn—that's why it wears—and sells.

TO THE TRADE

J-M NON-BURN Asbestos Brake Lining is sold only through established classified jobber and dealer trade channels. Discounts are generous and rigidly maintained, regardless of size of order. Ask the nearest branch for details of this profit-protecting sales policy.

H. W. JOHNS-MANVILLE CO.
NEW YORK CITY
Branches in 55 Large Cities

NON-BURN ASBESTOS BRAKE LINING

When writing advertisers please mention Motor World

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KING EIGHT

in four body models of exceptional comfort, convenience and luxury, each mounted on that powerful chassis—still further refined—which achieved the sixteen famous King road records of last year. Can you get more by paying more is the question these cars will ask you.

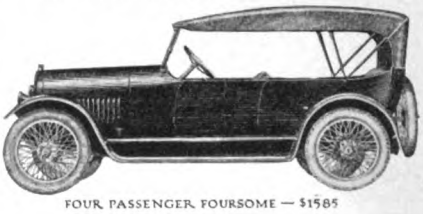
All prices quoted may be advanced at any time

Write for descriptive matter and name of nearest dealer

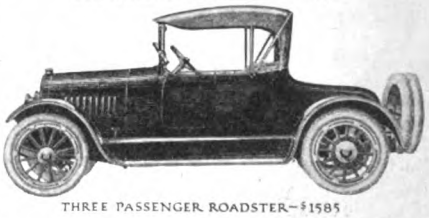
Wire Wheels $100 extra—all models
Prices F. O. B. Detroit

KING MOTOR CAR COMPANY
DETROIT

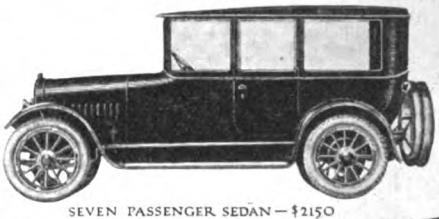
MODEL EE
SIXTY HORSE POWER



FOUR PASSENGER FOURSOME — $1585



THREE PASSENGER ROADSTER—$1585

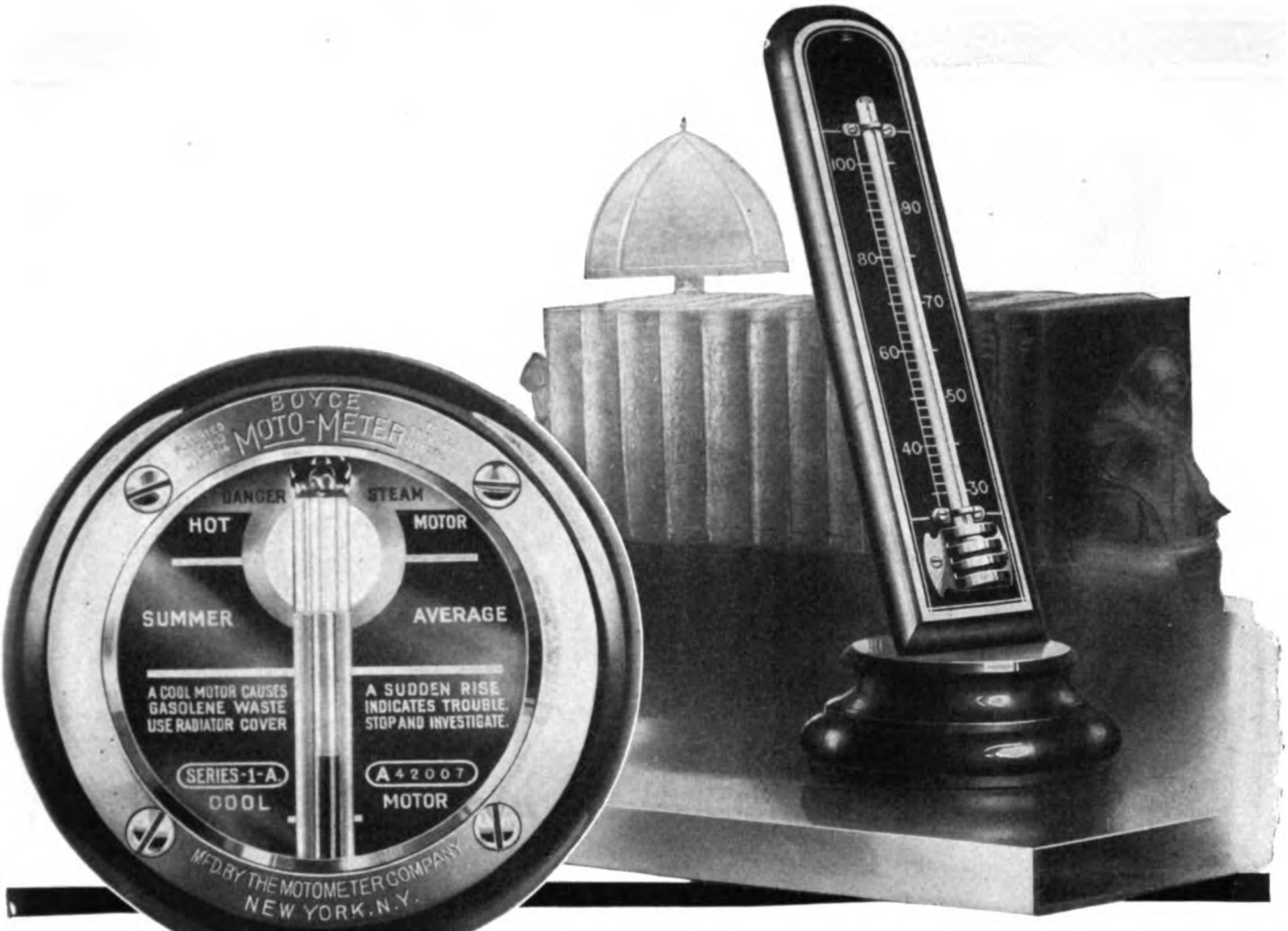


SEVEN PASSENGER SEDAN—$2150

SEVEN PASSENGER
TOURING $1585

"The Car of No Regrets"

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THE DIFFERENCE

The Boyce Moto-Meter has a temperature range from 32 degrees to 212 degrees compressed within two inches.

THE ORDINARY HOUSEHOLD thermometer from 32 degrees to only 100 degrees within *four to six inches.* The

BOYCE MOTOMETER

while simple to one not skilled in thermometer manufacture is in reality a masterpiece in the thermometer industry.

THE GREAT SUCCESS of this motor-heat indicator is due **solely to its accuracy; such an instrument, unless accurate, is worthless on any car.**

ONE HALF MILLION of these instruments are in use, and the trade takes no chance in selling them.

Standard Model - -	*$10.00*
Junior Model - - -	*5.00*
Midget Model - - -	*2.50*

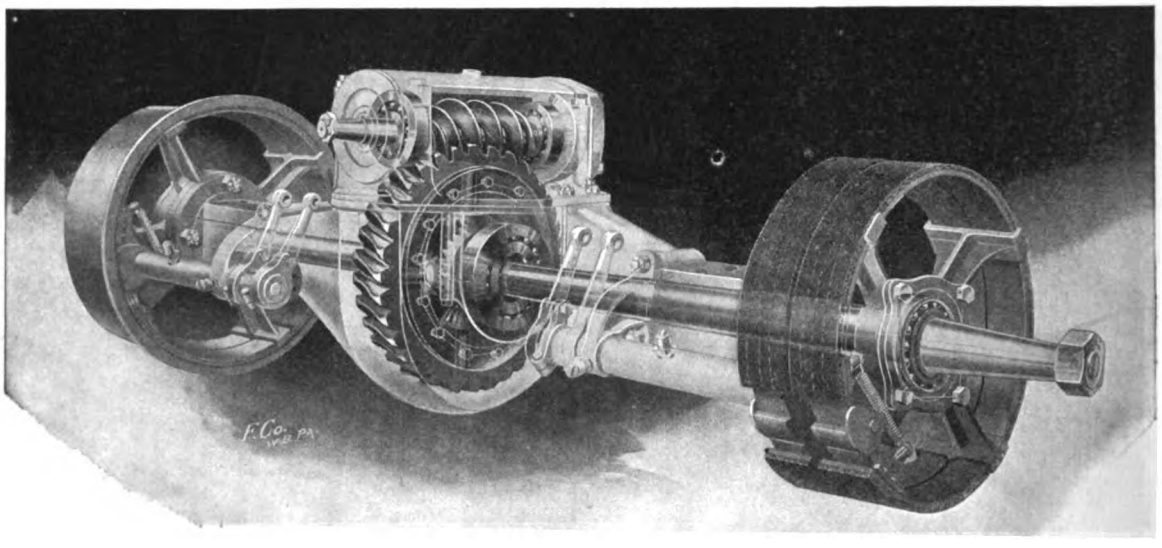
Write for demonstrating stand and circulars.



MOTO-METER COMPANY, Inc.

Long Island City, N. Y.

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SHELDON

Semi-Floating Worm Gear Axles Are SOUND Axles

SOUND in design because they are simple.

SOUND in construction because of the high quality of their materials.

SOUND in performance because they are built to stand up under the rack and grind of heavy duty truck service.

"The highest priced axles in the world, and worth all they cost."

Sheldon Axle and Spring Company

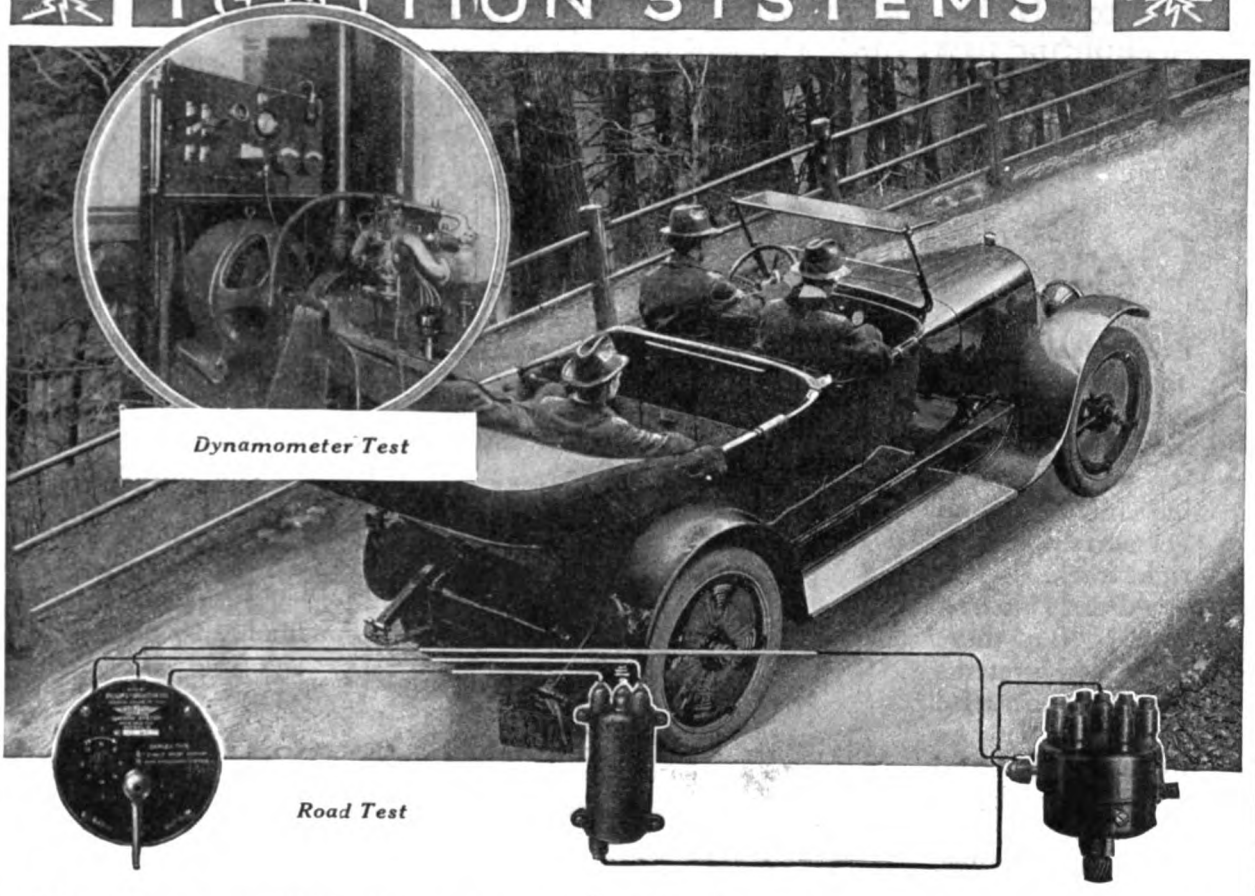
Wilkes-Barre, Pa.

WINNER OF GOLD MEDAL AT PANAMA-PACIFIC INTERNATIONAL EXPOSITION

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DUPLEX PHILBRIN

IGNITION SYSTEMS



IN performance, we believe this new system of "Duplex" ignition possesses more distinct advantages and will deliver more uninterrupted satisfaction than any other ignition system on the market.

To appreciate its greater efficiency you should see it in action.

It transforms an old motor completely.

It enables it to take grades heretofore impossible on high, swiftly and easily, without the slightest suggestion of laboring.

Abuse it—step on the throttle, throw it clear down as you have never dared before. The response is instantaneous, not the slightest sign of choking, not even a falter.

In every day running you will be continually finding new things in its favor.

Its ability to render the motor more responsive, more flexible, more powerful and *far more economical of fuel* is truly wonderful.

On difficult grades it fairly lifts the motor along and on the clear stretches there seems no limit to her **new-found power.**

For cold weather driving **PHILBRIN Duplex Ignition** has many distinct advantages.

By a turn of a switch a *high-frequency* system of ignition is brought into use—a system that distributes a "shower of sparks" of remarkable intensity to each cylinder in its firing order, at the rate of *a thousand sparks a second.*

No matter how cold the motor it invariably capitulates before this system. For a lean mixture, a low grade fuel, fouled spark plugs or faulty carburetor adjustment this system is invaluable.

By a turn of the switch you can run on either system. Each has its own individual advantages. Either system can be used continuously. Neither system will wear out before your car.

The current consumption is negligible—a set of dry cells will operate a 4-cylinder system for months.

Easily attached to any motor, without changing the motor. Moderate in price.

Write for descriptive catalogue.

Dealers—Jobbers: Our distributing arrangements are being completed NOW. Write for details.

PHILIPS-BRINTON COMPANY

Sales offices, Weidener Bldg., Philadelphia, Pa.

Kennett Square *Pennsylvania*

PHILBRIN

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Notice of Price Advance!

Because of greatly increased cost of materials and labor it is necessary to advance the net price of Motor World's simplified System of Accounting to $15.00. Present price is $12.00.

New price will become effective on all orders placed on and after April 1st, 1917.

Order Now and Save 25 Per Cent

Every dealer and garage owner who is operating without a complete and accurate system of accounting owes it to himself—to his very best business interests, to reform his methods and get started on the right track.



Already more than 1500 of these simplified systems are in successful operation in as many dealer and garage establishments throughout the United States. Hundreds of letters are on file from dealers and garage owners who commend Motor World for having developed this wonderful simplified accounting system.

If your business is being conducted in a systemless manner we urge you to get started on the right course NOW. Take advantage of the present low price. Get your order on file now—before the price is advanced twenty-five per cent.

The entire system is contained in one loose leaf binder — everything in one book, including an index set and 400 "Income," "Expense" and "Accounts Receivable" sheets. Also included is a 36-page book which describes the operation of the system in detail. Instructions are written so that you grasp every detail even tho you never had bookkeeping experience or training.

Order now—don't put it off a single day. Remit by check or money order. Address:

MOTOR WORLD
For DEALERS, JOBBERS AND GARAGEMEN

239 West 39th St., New York City

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You Need Not Keep A Customer Waiting



When he comes in for a new spring you have it for him right on the rack.

If by any chance you should not have it on the rack you can wire us and get it at once. We have constantly on hand springs to fit 90% of all American cars.

But if he is one of your regular customers you will have it right on the rack, for we give you the rack free and fit it out with springs most likely to be called for by your regular trade.

VULCAN QUALITY

This is part of our DEALER CO-OPERATION plan. Write for particulars. They will interest you.

JENKINS VULCAN SPRING CO.

1402 Chestnut St., St. Louis, Mo.

708 Commerce St., Fort Worth, Tex.

29 Caldwell St., Sumter, S. C.

Mr. Car Owner:

Keep your car looking new, by using

Be-Be-Co Shine Up Specialties

Be-Be-Co TRADE MARK

Mohair Top Dressing.	Brass Polish.
Leather Top Dressing.	Nickel Polish.
Top Lining Dye.	Body Polish.
Seat & Slip Cover Cleaner.	Motor Car Soap.
Cushion Dressing.	Tire Paint.
Metal and Body Finish.	Hand Cleaner.

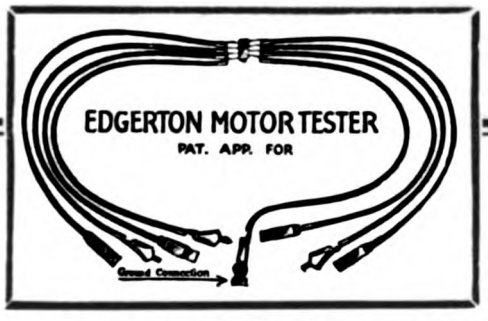
BOSTON BLACKING COMPANY

Est. 1890 (*Specialty Dept.*) Inc. 1900

East Cambridge, Mass. (Home Office and Factory)

Branch Factories:
Chelsea, Mass.; Montreal, Canada; England, Germany, France, Austria, Sweden, Italy, Australia.

Branch offices and warerooms in all large cities.



A Tester That Will Sell Because It—

Locates instantly missing explosions
Weak cylinders
Knocking bearings
Makes Carburetor adjustments easier
And burns Carbon off Exhaust
Valve Seats in a few minutes

It does this scientifically, and at a minimum expense of time and labor and without dismantling any part of the motor. Every garageman, repairman and owner needs it and will get it. Whether he gets it from you depends on how soon you—

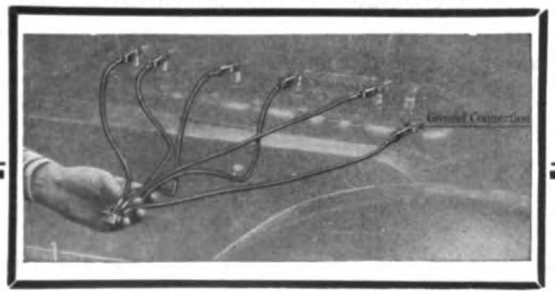
WRITE FOR PARTICULARS AND TRADE PRICES TO

R. G. EDGERTON & COMPANY

Sole Manufacturers

Suffolk Virginia

It is guaranteed for twelve months

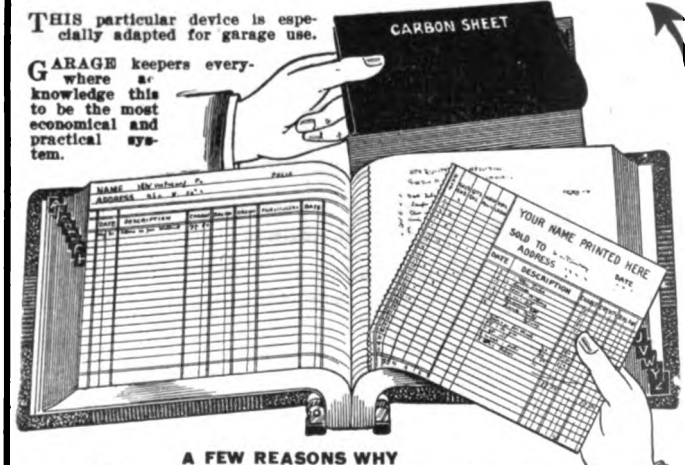


SAVE TIME AND MONEY

Our SPECIAL GARAGE Bookkeeping Plan Gives You the HIGHEST Possible EFFICIENCY

THIS particular device is especially adapted for garage use.

GARAGE keepers everywhere acknowledge this to be the most economical and practical system.



A FEW REASONS WHY

1—When you enter an account a bill for the customer is made at the same time.
2—Simplified method for recording and posting all items.
3—Avoids the necessity of posting each item.
4—Requires the minimum amount of labor.

THIS PAGE IS THE CUSTOMER'S BILL
THE ONE UNDERNEATH IS YOUR COPY

SEND FOR DESCRIPTIVE FOLDER AND FULL PARTICULARS

THOMAS J. HARTON & CO., Inc., 212a Church St. NEW YORK

Loose Leaf Specialists

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Gemco MILWAUKEE End Thrust BUMPERS



AN EASY WAY TO DOUBLE SALES

Sell two bumpers every time instead of one. Car owners are quick to realize that they need a bumper on the rear end just as much as on the front.

And every car owner knows that it's cheaper to invest a few dollars in bumpers than to buy a pair of new lamps and a new fender every once in a while, to say nothing of having the car tied up for several days.

Ask your jobber about Gemco Bumpers, or write direct to

Gemco Bumpers pay a good profit on every sale. They are made on the correct End Thrust Principle, with channel or diamond bars, to fit all cars.

GEMCO MANUFACTURING CO.
756 So. Pierce St. :.: :.: Milwaukee, Wis.
Popular Automobile Accessories

LONG AS CONSTANT AS NIAGARA

for

MOTOR CARS MOTOR TRUCKS AND TRACTORS



Long Cooling Systems perform a greater service—and give greater assurance of perfect radiation than you can reasonably expect of the common radiator. Each Long Cooling System for each motor is designed to order. Each step in creating the design is taken in co-operation with the Engineering Departments of our factory and those of the manufacturer. Proper design insures proper construction. **By reason of this co-operation, we attain minimum cost and maximum efficiency.**

LONG MFG. CO.
DETROIT, MICH.

Pioneer Makers of Gasoline Engine Cooling Systems

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This Is the Plug



Have You This Plug On Your Car?

These Are the Manufacturers Who Equip With AC

The Standard Spark Plug of America

Cadillac	Oldsmobile	McFarlan	Moreland Trucks
Pierce-Arrow	Jeffery	Westcott	Pilot
Packard	Kissel Kar	Lexington-Howard	Singer
Marmon	Premier	Brockway Truck	Stephens
Hudson	Knox	Chase Truck	United Truck
Chalmers	Jordan	Daniels	Wilcox Trux
Hupmobile	Liberty	Federal	Signal Trucks
Chandler	Crane-Simplex	G. M. C.	Republic Truck
Haynes	Stearns Knight	Gramm-Bernstein Trucks	Sterling Truck
Chevrolet	Saxon	Murray	Sandow Truck
Dort	Stutz	Bour-Davis	Gabriel Truck
Cole	National	McLaughlin (Canada)	Diamond T Truck
Reo	Velie	Scripps-Booth	Pathfinder
Paige	Jackson	Monroe	Abbott
Peerless	Apperson	Netco Trucks	Anderson
Dodge Brothers	Davis		American-La France
Buick	Detroiter		Four Wheel Drive
Oakland	Paterson		

Accept No Plug Unless AC Is Burnt into the Porcelain

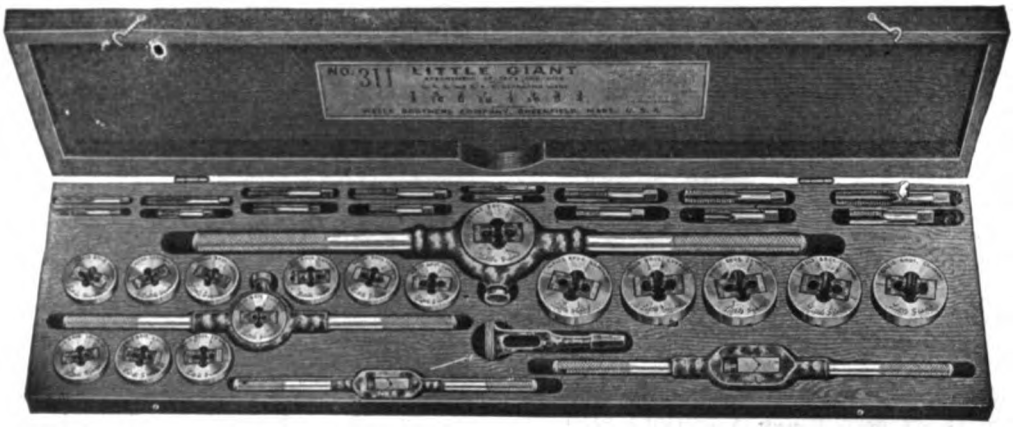
Sold Everywhere

No Greater Recommendation Can be Given a Spark Plug

Champion Ignition Co. Flint, Mich.

"Little Giant" Combination Screw Plates

Both United States and S. A. E. Standards



These assortments are particularly valuable in the automobile repair shop where a considerable amount of threading is done. Each die is contained in its own collet and is adjusted to size. There is also a Bit Brace Die Holder for cleaning up battered threads in hard-to-get-at places.

Every need of the manufacturer, the garage and repair man, or the car owner who makes his own repairs, for tap and die assortments can be supplied from our big line.

Send to-day for the circulars "Tools for the Automobile." "First aid in the up-keep of the Automobile."

Greenfield Tap and Die Corporation, Greenfield, Mass.

NEW YORK, 28 Warren Street CHICAGO, 13 South Clinton GALT, ONTARIO, Wells Brothers Co. of Canada, Ltd.

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EVERYONE who knows it speaks well of the Republic tire.

The rapid spread of its good reputation among buyers is due to what they have heard of the Prodium Process of compounding rubber.

Sales records show that dealers are adding daily a total of four to five hundred *new* users of Republic tires.

Prodium is a discovery, exclusively used by Republic, that makes the tires tougher; that wears as slowly, smoothly and evenly as a fine piece of steel.

Probably no other improvement in tire-making has so increased the intrinsic and monetary value of the tire.

The Republic is now rewarded, for this latest discovery, by an acceleration of sales that rank it among the very first of the popular brands of tires.

The demand for Republic tires, constantly increasing, the better wear and longer life, the light service requirements that keep you and your customer happy, are reasons that make Republic dealership more desirable than ever.

Republic Black-Line Red Inner Tubes have a record free from trouble

The Republic Rubber Company

Youngstown, Ohio

Branches and Dealers in all Principal Cities

Made in the famous STAGGARD, TRADE MARK REGISTERED U. S. PATENT OFFICE and Plain Treads



REPUBLIC PRODIUM PROCESS TIRES

WE SPEND A LOT

OF MONEY THAT ALL THE

M.T.D.&M.CO

"MORSE" DRILLS

YOU USE WILL BRING SATISFACTION IN THAT USE

That is why every single drill is continually inspected in process. That is why all are ground to size after being hardened except the very smallest in machines that were developed in our own shops. We are doing everything that fifty years of experience has taught us is necessary to give you the most perfect drill possible.

CAN YOU AFFORD TO LEAVE THEM UNTRIED?

Morse Twist Drill & Machine Co.

NEW BEDFORD MASS.

LUNKENHEIMER GASOLINE ENGINE PRIMER



Makes starting easy! It saves the starter battery! It lessens labor when cranking by hand!

A stroke or two of the plunger puts a charge of atomized gasoline directly into the intake passages, from where it enters the cylinders, giving a power impulse on the first turnover.

It is a time, labor and money saver—an accessory that every motorist should have.

Easily attached to any make of car. Write for descriptive Booklet No. 513-BD.

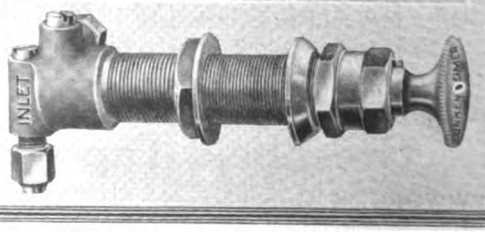
A profitable accessory for Dealers and Garagemen

THE LUNKENHEIMER CO. "QUALITY" 35-13-24

Largest Manufacturers of High Grade Engineering Specialties in the World.

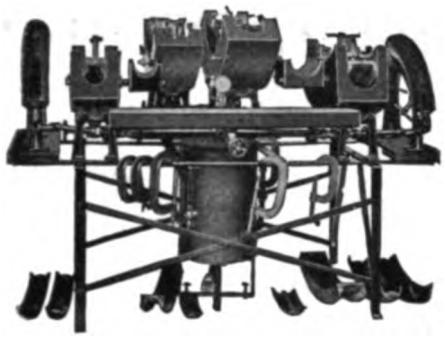
CINCINNATI

New York Chicago Boston London



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Vulcanizing With a Vanderpool Vulcanizer Brings Big Profits

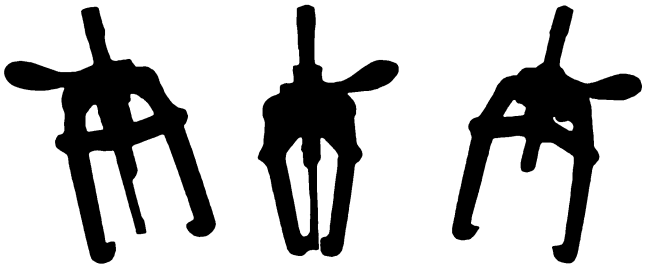


3 Cavity Combination Vanderpool Vulcanizer

Here is an exceptional opportunity for Garages as well as Vulcanizing Companies to secure a vulcanizer that will turn out high-grade work at a small cost. The fuel saved alone, will pay for the machine in a short time—then you will "cash in" on your investment. This plant, the Vanderpool Vulcanizer, is meeting with enthusiastic approval of hundreds of satisfied users all over the country. Unsolicited testimonials from the various companies now using the "Vanderpool" testify to the dependability, efficiency and economy of this "Vulcanizing Wonder." One man writes that the first month's profits paid for the plant. No experience needed—we teach you how. It occupies very little floor space, and "once bought, you will never have to buy again."

Send in this ad with your name and we will mail catalogue and prices.

VANDERPOOL COMPANY
Box 82 Springfield, Ohio



Collison's Universal Puller
(PATENTED)

Will do more things

quicker and better than any other tool in your shop. It has a range of action 1 3/16" to 15" diameter. Three sets of jaws furnished with each puller (3-5½", 3-7½", 2-12").
Works on principle of universal chuck. Turning handle expands or contracts jaws at will. Can be used either with 2 or 3 jaws.

For removing Wheels, Jack shaft gear, cardan joint, magneto coupling, magneto gear, wrist pin.
For straightening frames, steering spindles, spring axles.
For assembling clutch, replacing clutch bushings, and many other uses.
1300 now in use in New York and New England.

ABSOLUTELY GUARANTEED
Satisfaction or money back

25% discount to dealers and garagemen.

Price complete $20 f. o. b. Burlington.

GEO. A. COLLISON BURLINGTON, VERMONT



The Long Smooth Exhilarating Plunge of the Toboggan Is Yours in the Ford

W & C Equipped

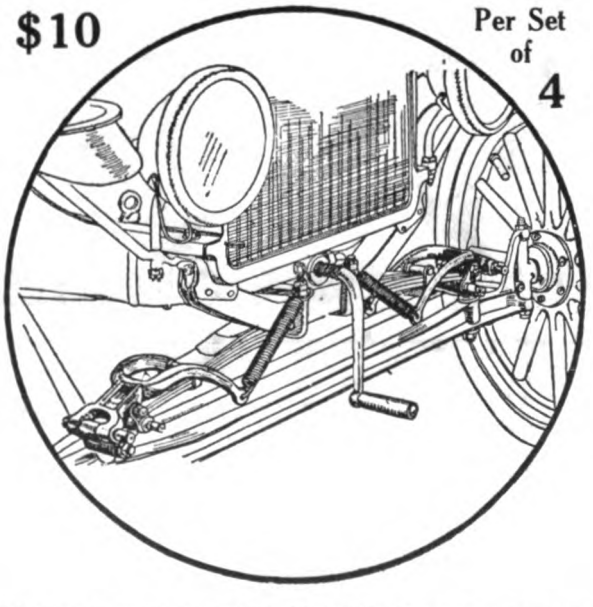
Your Ford takes the road with the even swiftness of the toboggan, once the jolt and jar of bumps is overcome by W & C—

The Original Double Arm Shock Absorber For Fords

There's a smooth, easy ride in every Ford that has a chance. W & C Shock Absorbers iron out Ford car riding qualities, from the first minute they're installed. You don't know how comfortable your Ford can be until you try it—W & C equipped. *Say "W & C"* to your dealer today. He'll know.
DEALERS find W & C a big selling accessory that pays. *Ask your jobber's salesman.*

PHILIP H. WEBBER & COMPANY
Hoopeston Illinois

$10 Per Set of 4



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Haywood's



Nationally Advertised

Tire Repair and Vulcanizing Service

In these days of high tire prices, the tire repair business is getting bigger and better than ever, as motorists learn the method of true tire economy. Why not cash in on this opportunity? Put in a Haywood Tire Repair Plant. Link up with a nationally advertised tire repair service. Six years of Haywood's advertising has standardized the Haywood method.

The Sign of the Man and Machine

—is the connecting link between the tire repair man and the automobile owner. It chains the established trade of hundreds of customers to your business. It connects your shop with a national tire repair service—a standardized service—a service that motorists know absolutely to be economical, practical and efficient.

The Haywood System

—is scientific—a true system of conservation of tires—a system that saves motorists thousands of dollars on tire bills. It means repairs that are lasting—vulcanizing that holds—repairs that are solid as the original tire itself, insurance to motorists of no regrets on the road.

Haywood's Tire Repairing and Vulcanizing Plants

The Haywood Plants are complete, all in one unit—are easily operated—no experience necessary. Here is your opportunity to make big money—to add hundreds of dollars in profits a year to your business. Occupies only a small part of your shop—can stand right out in the open where your customers can see it—a constant reminder to keep their tires repaired. Your shop equipped with a Haywood Plant is the motorist's logical haven for tire repairing. It completes your service—a service that customers like—a service that brings and holds business at big net profits.

Write for New Catalog

Use a letter, or post card or simply send the coupon below. This brings the big book of facts—tells all about tires and how to repair them—shows outfits in use—gives proof of successes—shows how we co-operate with plenty of advertising and plenty of help—how you link up with a national service. Book gives complete details. Write today. Don't delay.

The Haywood Tire & Equipment Co.
1042 N. Capitol Ave., Indianapolis, Ind.

Haywood Tire & Equipment Co.,
1042 N. Capitol Ave., Indianapolis, Ind.

Gentlemen: Please send me full particulars of your national service of tire repairing and complete catalog and information of Haywood Tire Repair Plans.

Name .....

Address .....

.....

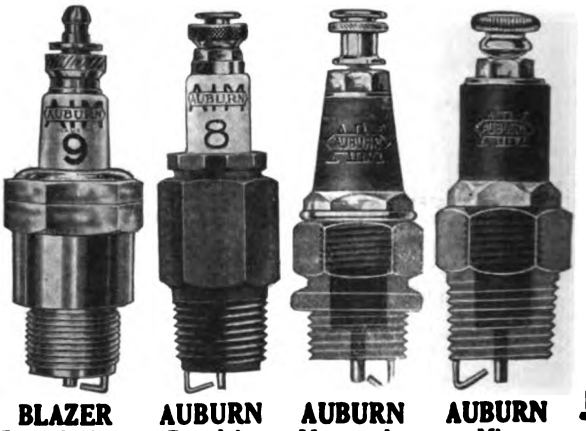
SPARK PLUGS AUBURN REG. U.S. PAT. VALVE LIFTERS

LOOK FOR THE AIM BEHIND THE NAME

AUBURN VALVE LIFTER



Price 75 Cents Each



BLAZER	AUBURN	AUBURN	AUBURN
Finite Insulation	Porcelain	Motorcycle	Mica
Price $1.00	75 Cents	Price $1.00	Price $1.00

Auburn Ignition Mfg. Co. AUBURN, N.Y. U. S. A.



WOOD'S EVERLOC

Saves 75% on Tube Repairs

SAVE 75 per cent in time and money on inner tube repairs from now on by using Everloc Self-Vulcanizing Tire Patch instead of slow, expensive, machine vulcanizing. Everloc requires no heat—no tools—or experience. Just cut the amount you need and apply.

Everloc will hold tight from the minute it touches the tube. You can drive as hard and fast as you want. Everloc won't leak or give. It becomes part of the tube itself.

Everloc is made of a layer of genuine U. S. Khaki, with a layer of cured rubber pressed in, to make it airproof, and over this is the sticking surface of Pure Para Rubber.

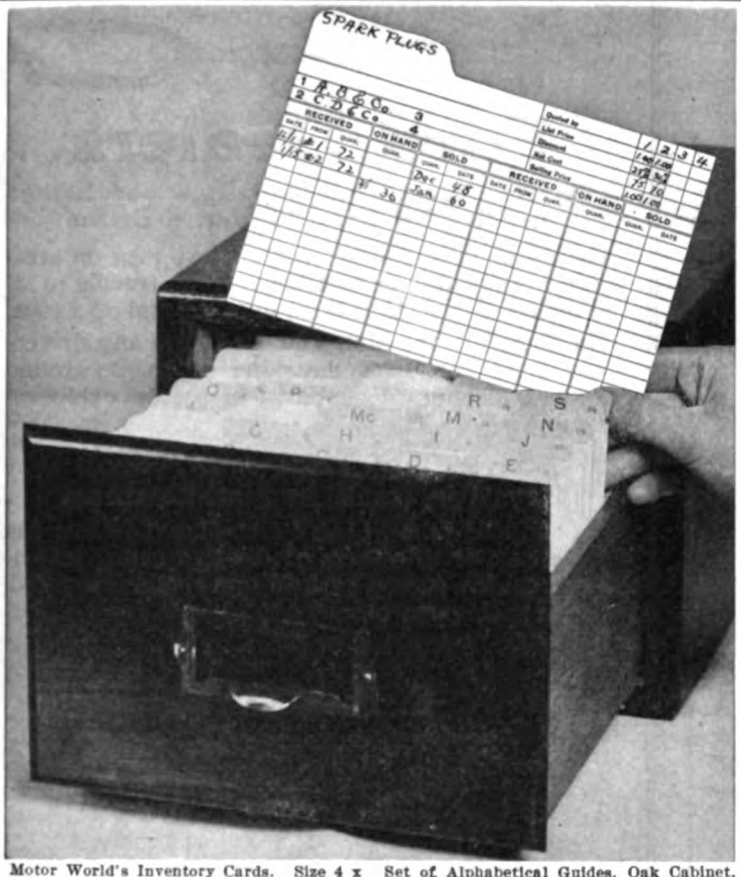
Any puncture or blowout up to 17 inches in length can be repaired with Everloc. If your dealer is sold out, send us his name for sample strip.

In Sheets: 6½x18½ inches $1.50; 4x18 inches $1.00; 2x16½ inches 50c

W. C. WOOD COMPANY, 40 NORTH TENTH ST. MINNEAPOLIS, MINN.

We make a special sheet 20x28 inches for garage use

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Motor World's Inventory Cards. Size 4 x 6, $1.00 per 100; $9.00 per 1000. Size 5 x 8, $1.25 per 100; $12.00 per 1000. Outfit 46A, consisting of 500 Cards, 4 x 6. Set of Alphabetical Guides, Oak Cabinet, Complete, $8.75. Outfit 58A, consisting of 500 Cards, 5 x 8. Set of Alphabetical Guides, Oak Cabinet, Complete, $11.00.

Here *You* Have It!

A complete record of your stock of materials and accessories on hand. This Motor World's Inventory and Perpetual Stock Record Card shows you, in a jiffy, the condition of your stock of any article on hand—what it costs, its selling price, how many bought, how many sold, and the balance on hand.

This system is essential to good business methods. YOU should have it. NOW is a good time to install the Motor World's Stock Record System. ACT AT ONCE. This System pays for itself.

Send Check or Money Order to

A. Bobbe & Company

Exclusive Authorized Manufacturers of Motor World's Card Systems.
Special Systems designed and manufactured to order.

320 Broadway New York City

PROFITS!



Every Ford owner in your locality driving a 1915-16 model needs this wonderful little device. At $2.00 you should be able to sell hundreds of them. The profits are attractive—sales are assured.
The biggest selling Ford accessory of the year!

VAN SICKLEN AUTOMATIC HEAD LIGHT CONCENTRATOR FOR FORD CARS

The most simple, logical and trouble-proof device of its kind. Easily attached on under side of dash in a few minutes by anyone. Automatic in operation. Nothing to get out of order. Positive in action. Sells and stays sold.

HOW IT OPERATES

At all speeds below 15 m.p.h. the VAN SICKLEN Concentrator automatically short circuits the right headlight, diverting the right lamp quota of current to the left headlight, thereby furnishing sufficient light *in one lamp* for every required purpose.
At 13 m.p.h., for instance, the left headlamp is burning as brightly as it would be at 26 m.p.h.
Write for interesting dealers' proposition and detailed information today. Territory going fast. Immediate action is necessary. Wire if you're a live one.



Illustrating Simple Installation

THE VAN SICKLEN COMPANY

15 Chicago Street Elgin, Illinois



The Truck of One Ton Trucks

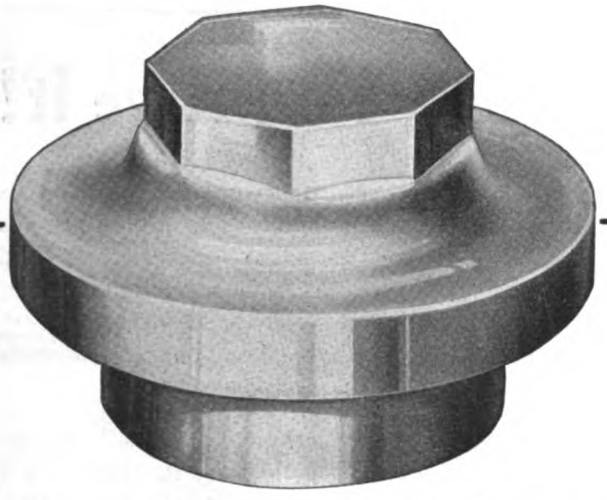
The Big New One Ton SELDEN TRUCK

CHASSIS PRICE **$1385** F.O.B. Rochester N. Y., U. S. A.

DEALERS: This truck alone will build a profitable business for you. There are six other powerful models in the Selden Complete Line of "In-Built Quality" Trucks. Get our New Sales Proposition QUICK!

Selden Truck Sales Co.
Rochester, N. Y., U. S. A.

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Cast Brass Hub Caps
for
FORD CARS

Nickelplated or Polished Brass

Write for Prices

THE PFAU MFG. CO.
235 MENTOR STREET
CINCINNATI, OHIO



Ford Dealers

This New Sloat One-Man Tow Bar Brings in Disabled Cars Without a Driver

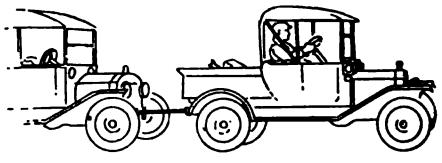
There's no need now to send out two men on ordinary towing jobs, or to ask owners in trouble to sit in their cars and drive them in at the end of a rope. The SLOAT One-Man Tow Bar tows any driverless Ford car, over any kind of roads, around corners, and into doorways, and prevents collision at stops.

Saves You Time and Money
Pays for Itself in New Business

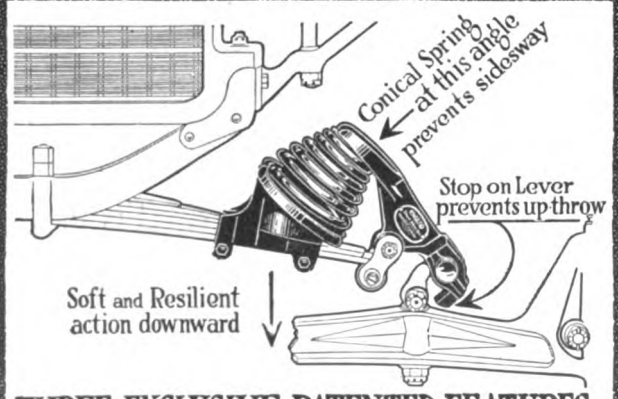
Dealers using the SLOAT One-Man Tow Bar get preference from owners of disabled cars. Investment quickly earned back in time and labor saved, and in paying new business.

Write for details and price.

E. R. SLOAT
1302 Woodward Ave., Detroit, Mich.



HASSLER
Shock Absorber
For FORD Cars



THREE EXCLUSIVE PATENTED FEATURES

"Recognized as the Best"
— 100,000 FORD OWNERS RECOMMEND IT —
WRITE FOR DEALERS TRIAL SET PROPOSITION

Robert H. Hassler, Inc.
Indianapolis, Ind.

$15 for a Set of four

Stop at the Woodstock
FORTY-THIRD ST., NEAR BROADWAY



Located just off Times Square

The Hotel Woodstock

is within a handy walk of everything—terminals—subways—elevateds—surface lines—theatres and the automobile district, yet you can have quiet, refinement and service withal.

Single Room, with Bath . . $2.00 and $3.00 for one
Single Room, with Bath and Two Beds, $4.00 and $5.00 for two

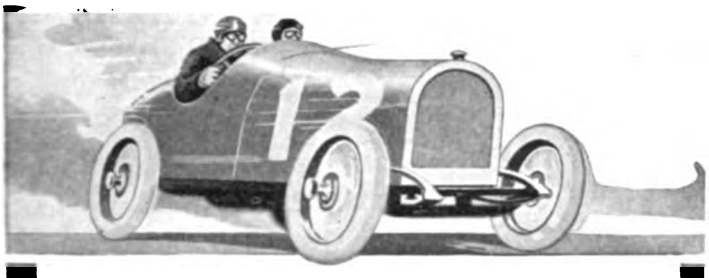
European plan restaurant unexcelled for its cuisine

Service and accomodations unsurpassed for completeness and efficiency

Write for our Map of New York

W. H. VALIQUETTE, Managing Director
A. E. SINGLETON, Asst. Manager

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Faster! Faster! Faster!

Speed—power—they call for *perfect ignition*—a spark so flashing, burning hot that the mixture doesn't matter. Richest mixture to leanest, you'll get a full explosion every time if you have an

EISEMANN MAGNETO

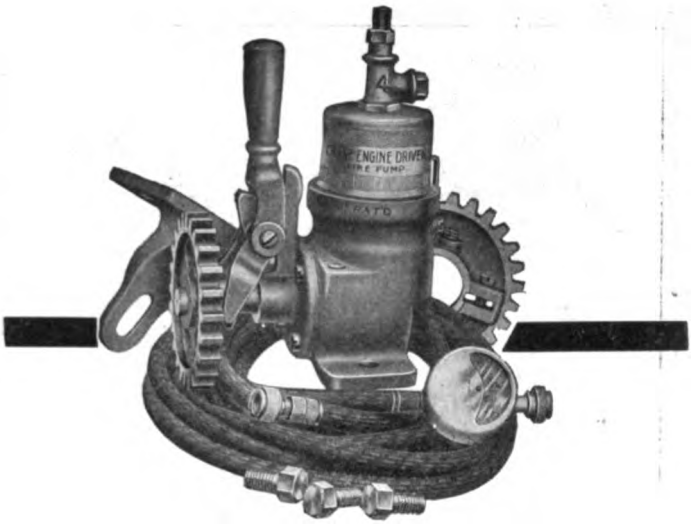
Just as good at lower speeds, too. Even when your motor is barely turning over, the Eisemann spark is hot and powerful.

EISEMANN MAGNETOS are so dependable and efficient that 117 manufacturers of Pleasure Cars, Trucks, Tractors, etc., have adopted them as standard equipment. That should mean something to you!



THE EISEMANN MAGNETO CO.

Sales and General Offices
32-33d St., Brooklyn, N. Y.
902 Woodward Ave., Detroit, Mich.



9 Out Of 10 Want The CRANE

Most motorists need Power Tire-Pumps. But few care to pay twice for a 50% efficient pump.

That's why **9 out of 10 want the CRANE!**

Due to patented packing-ring construction—the CRANE is 97% efficient—instead of the usual 56%.

Yet it sells for **half** the ordinary price. ONLY $8 COMPLETE. Including Hose, Pressure-Gauge and Special Fittings for every standard make and model car.

Write Your Jobber Or Us.

BAY STATE PUMP COMPANY
101 Purchase Street, Boston, Mass.

Crane PATENTED



THE MANLEY "EVERY WAY" ENGINE STAND

supports the motor perfectly, while allowing the workman to reach every portion of it with ease and accuracy.

The "Every Way" can be adjusted to every position in a circle—100 positions if desired—but the three most convenient are the Horizontal Position for working on valve mechanism and generally around the engine; the 45-degree Position (shown in cut) for cleaning carbon, grinding in valves, etc.; and the Inverted Position for taking up crankshaft, connecting rod, bearings, etc.

In each position the engine is locked rigidly by two side braces. The "Every Way" supports the engine solidly. It will never become shaky, and should last a lifetime without repairs.

For the Factory motor assembly department no other stand has been brought out that can be compared to the "Every Way" for efficiency and convenience.

The United Engine & Mfg. Co.
"Pioneers in Garage Equipment"
Hanover, Penn.

THE Manley SHOP AND GARAGE EQUIPMENT

Economy of Current Consumption Positive Unfailing Action—

—are the two points of superiority most obvious in the **PITTSFIELD DISTRIBUTOR**

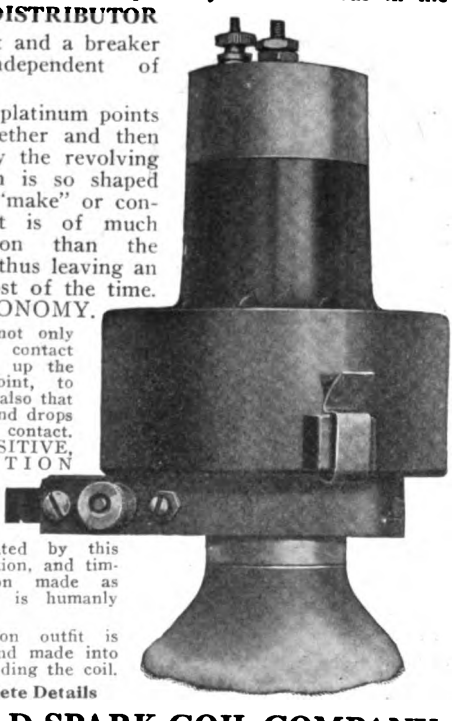
An open circuit and a breaker mechanism independent of springs.

The two small platinum points are forced together and then forced apart by the revolving cam. The cam is so shaped that while the "make" or contact is firm it is of much shorter duration than the "break" action, thus leaving an open circuit most of the time. This means ECONOMY.

The cam action not only drops the lower contact point, but pushes up the upper contact point, to break the contact; also that it lifts the lower and drops the upper to make contact. This means POSITIVE, UNFAILING ACTION—MECHANICAL ACTION.

Electrical and mechanical lags are practically eliminated by this simple, positive action, and timing synchronization made as nearly perfect as is humanly attainable.

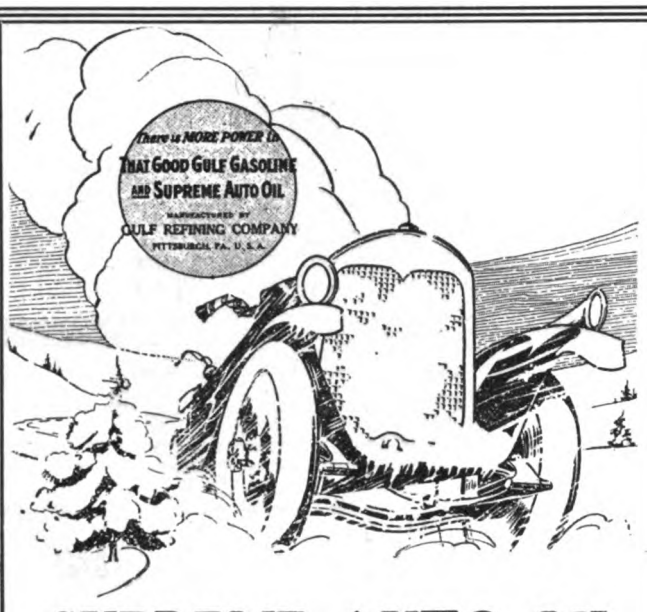
The whole ignition outfit is simple, compact, and made into a single unit, including the coil.



Write for Complete Details

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PITTSFIELD MASSACHUSETTS

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SUPREME AUTO OIL

Starts with the Engine

This is most important during the winter months. You should know whether the oil you are using "flows freely at zero." All oils do not possess this feature—notably the paraffine-base oils, which thicken up under cold and often cause great damage to the motor.

The safe way is to ask for SUPREME AUTO OIL—it **"Flows Freely at Zero"** and leaves less carbon, owing to the fact that it is a Southern Asphalt-base oil containing no paraffine to gum, stick or thicken.

GULF REFINING COMPANY
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The Largest Independent Refining Company in the World

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DETROITER SIX-45

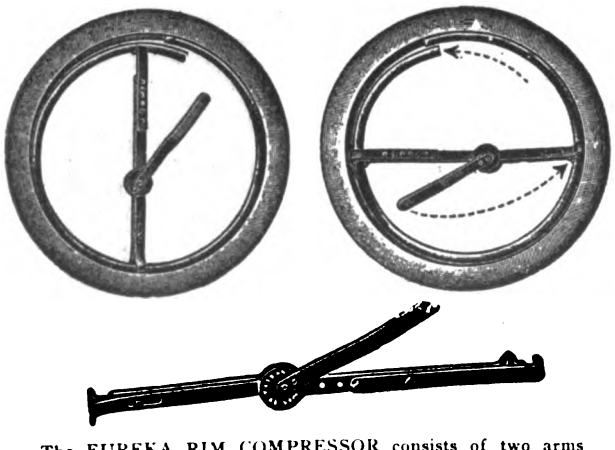
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UNIQUE VALUE **$1250** RAPID SELLER

Detroiter Motor Car Co., Detroit, Mich.

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Here the Automobile Trade has a tool that fills a long felt need, the most efficient implement for quickly removing tires from demountable rims of the transverse split type.



The EUREKA RIM COMPRESSOR consists of two arms with ends specially devised to fit the rims, moved by an eccentric joint with a long handle, exerting tremendous pressure. With it a man can remove and replace tires in from 12 seconds to a minute with very little expenditure of energy.

The Compressor is solidly built of heavy steel and is guaranteed for one year. Shipping weight, five pounds. Price, $3.00. Dealers or direct postpaid.

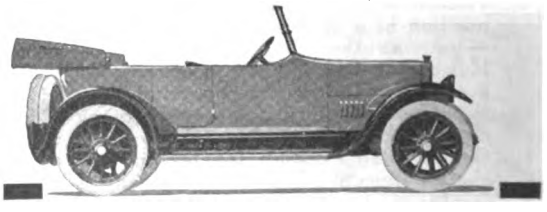
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Leatherwove
"Tis like the hide in most respects In some respects 'tis better
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Drednaut Motor Topping, Mohair Velvet Upholstery, Plush Motor Robes, Wool Robes, Steamer Rugs, Wexford Motor Cloths for Tops and Slip Covers, Rubber Cloths for Tops and Curtains, Felt and Rubber Radiator Covers.

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National Rubber Co., Pottstown, Pa.

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hand-made

are adjusted on a basis of 6000 miles. Ford sizes 7500 miles.

Excellent territory for a few agencies available. Particulars furnished on request.

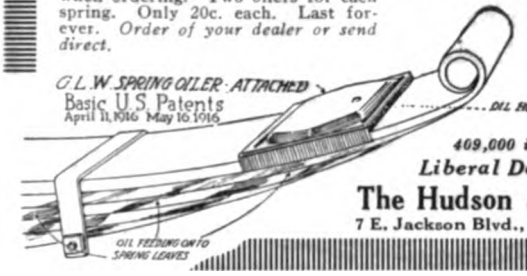
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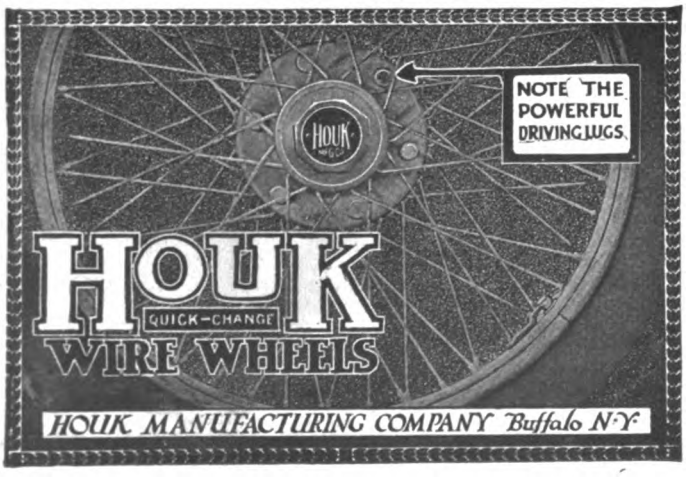
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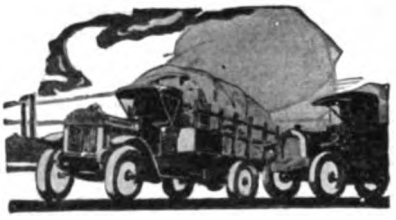
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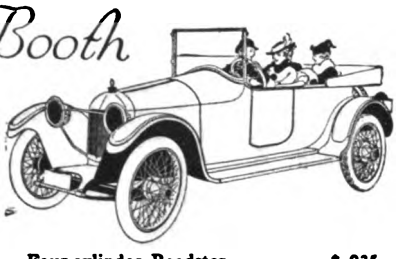
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Eight-cylinder Town Car	2575

Scripps-Booth Company
Detroit, Mich.

LIBERTY SIX
$1095

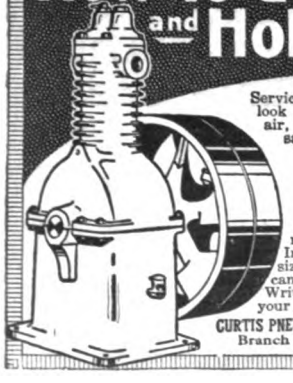
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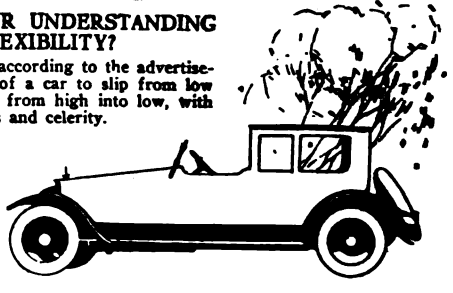
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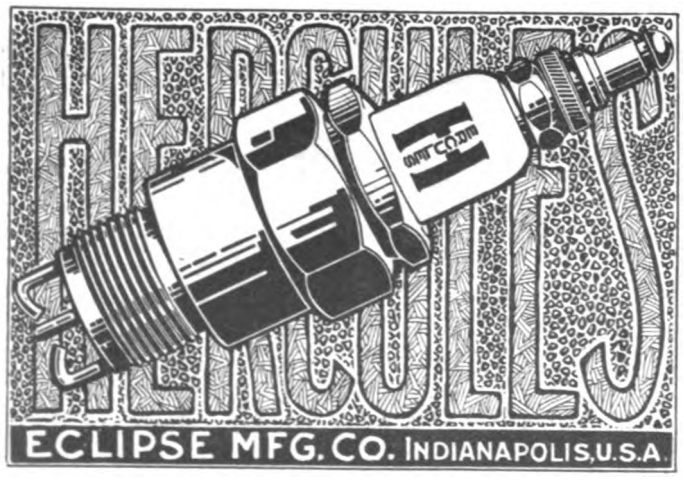
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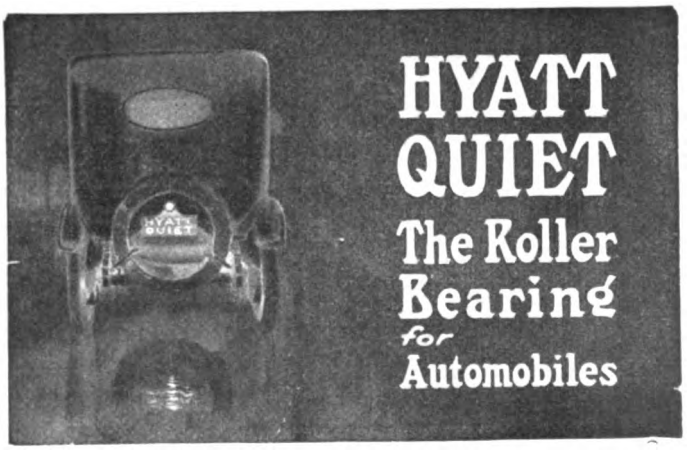
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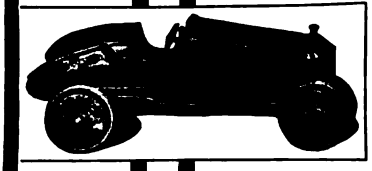
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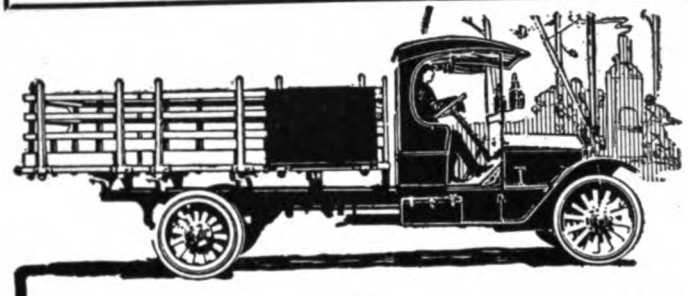
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Clero hand horn	1.55
Kellog's air pumps	6.00
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Reliners, all sizes	1.00
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	New Tires	New Tubes	Slightly Used Tires	Slightly Used Tubes
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31 by 3½	8.50	2.50	4.90	1.25
32 by 3½	9.00	2.40	5.25	1.40
34 by 3½	9.15	2.45	5.50	1.50
36 by 3½	10.75	2.65	6.25	1.50
30 by 4	9.20	2.80	6.50	1.50
31 by 4	11.75	2.75	6.25	1.55
32 by 4	11.95	2.90	7.00	1.55
33 by 4	12.60	3.00	7.25	1.60
34 by 4	13.10	3.15	7.75	1.60
35 by 4	13.50	3.35	7.25	1.70
36 by 4	14.00	3.45	7.50	1.75
37 by 4	18.25	3.75	8.70	1.85
34 by 4½	16.00	3.85	7.90	1.75
35 by 4½	16.50	3.90	7.90	1 80
36 by 4½	16.80	4.00	8 00	1.85
37 by 4½	17.25	4.15	9.25	1.90
35 by 5	16.40	4.45	8.00	1.90
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Buicks	Overlands	Maxwell
Interstate	Crawford	Warren 30
Flanders 20	E.M.F. 30	Everett 30
Cole 30	Winton 6 cyl.	Mitchell
Palmer Singer	Regal	Velie
Matheson Six	Chalmers	Krit
Locomobile	Rambler	Oldsmobile
Peerless	Jackson	Paige
Lexington	Ford N.R.S.	Gleason
Black Crow	Royal Tourist	Cadillac
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Reo, 1911	50	Kissel 50 H.P.	75
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30x3	$6.60	$1.80	36x4	$15.20	$3.50
30x3½	8.75	2.10	34x4½	18.50	3.75
32x3½	9.80	2.25	35x4½	19.50	3.80
34x3½	10.95	2.45	36x4½	20.00	3.90
31x4	13.00	2.90	37x4½	20.80	4.20
32x4	13.25	3.05	35x5	21.00	4.25
33x4	13.75	3.20	36x5	21.75	4.35
34x4	14.15	3.30	37x5	22.00	4.50
35x4	14.85	3.40			

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34 x 3½	9.60	10.45	2.35
31 x 4	11.45	12.60	2.95
32 x 4	11.95	12.95	3.05
33 x 4	12.45	13.50	3.10
34 x 4	12.95	13.95	3.20
35 x 4	13.45	14.95	3.30
36 x 4	13.95	15.50	3.35
34 x 4½	16.95	18.95	4.00
35 x 4½	17.45	19.45	4.10
36 x 4½	17.95	19.95	4.15
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31 x 3½.....	8.75	34 x 4½.....	17.00
32 x 3½.....	10.10	36 x 4½.....	17.75
34 x 3½.....	10.50	36 x 4½.....	18.60
31 x 4.....	12.35	37 x 4½.....	19.00
32 x 4.....	13.15	36 x 5.....	22.00
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30x3.....	6.50	2.00	35x4.....	14.00	3.45
30x3½.....	8.50	2.25	36x4.....	14.50	3.50
31x3½.....	9.00	2.50	34x4½.....	16.75	4.00
32x3½.....	9.50	2.50	35x4½.....	17.50	4.15
34x3½.....	10.00	2.55	36x4½.....	18.00	4.25
36x3½.....	11 25	2.75	37x4½.....	18.50	4.36
31x4.....	12.25	2.90	35x5.....	18.00	5.00
32x4.....	13.00	3.20	36x5.....	19.00	5.00
33x4.....	13.25	3.25	37x5.....	20 50	5.20

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30x3½.....	4.75	1.45	36x4.....	8.00	1.75
31x3½.....	5 00	1.50	34x4½.....	8.50	1.75
32x3½.....	5.75	1.50	35x4½.....	8.75	1.80
34x3½.....	6.00	1.60	36x4½.....10.00		1.85
31x4.....	6.75	1.65	37x4½.....	9 00	1.90
32x4.....	7.50	1.60	35x5.....10.00		2.00
33x4.....	7.75	1.70	36x5.....10.25		2.00
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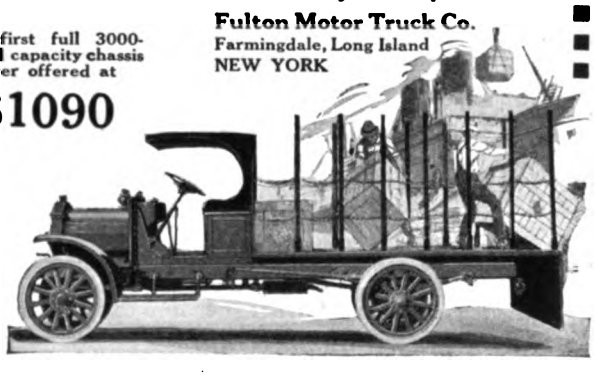


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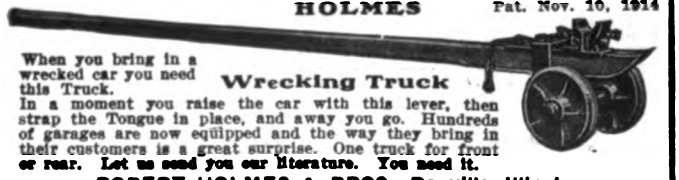
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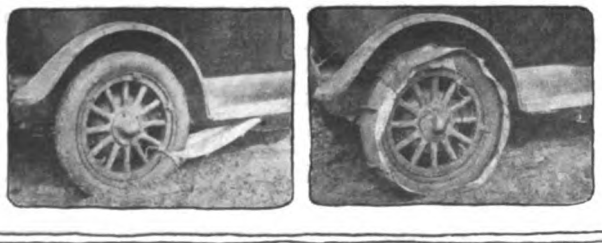
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Advertisers' Index

A

American Ball Bearing Co. 119
American Bronze Co. 2
American Electric Co. 115
Ames Co., F. A. 121
Atwater Kent Mfg. Works. 117
Auburn Ignition Mfg. Co. 110
Auto Accessories Corp. 130
Automobile, The 115

B

Backus Novelty Co. 119
Baker, R. & L. Co. 118
Batavia Rubber Co. 95
Bay State Pump Co. 113
Bayerson Oil Works. 96
Benford Manufacturing Co. 119
Bergie National Spark Plug Co. 116
Bethlehem Motor Corp. 65-68
Black & Decker Mfg. Co. 93
Bobbie Co., A. 111
Bosch Magneto Co. 70-71
Boston Blacking Co. 105
Brown-Lipe-Chapin Co. 120
Brunswick Motor Co. 116
Briscoe Motor Co. 100

C

Cassidy, E. A. 79
Chalmers Motor Co. 74-75
Champion Ignition Co. 107
Chase Motor Truck Co. 121
Chase & Co., L. C. 114
Chicago Auto Supply House. 129
Connecticut Tel. & Electric Co. 92
Collison, Geo. A. 109
Commerce Motor Car Co. 62-63
Curtis Pneumatic Mchy. Co. 118

D

Delion Tire & Rubber Co. 120
Detroit Accessories Corp. 121
Detroit Battery Co. 119
Detroit Motor Car Co. 114
Detroit Piston Ring Co. 114
Disco Electric Starter Corp. 120

E

Eclipse Mfg. Co. 118
Edgerton Co., R. C. 105
Eisemann Magneto Co. 113
Eureka Rim Co. 114

F

Faw, J. H. 118
Fedders Mfg. Co. 94
Firestone Tire & Rubber Co. 81
Fitzgerald Mfg. Co. 116
Fried & Stonier Co. 120
Fulton Co. 117
Fulton Motor Truck Co. 129

G

General Electric Company. 97
Gemco Mfg. Co. 106
Gibson-Hollister Mfg. Co. 117
Gibson Co. 61
Goodrich-Lenhart Mfg. Co. 73
Goodyear Tire & Rubber Co. 60
Greenfield Tap & Die Corp. 107
Grossman Mfg. Co., Emil. 122
Gulf Refining Co. 114
Gurney Ball Bearing Co. 84

H

H. & D. Company. 116
Hamilton Corp. 58-59
Hartford, E. V. 119
Harton & Co., Thos. V. 105
Hassler, Inc., Robt. H. 112
Hawthorne Mfg. Co. 116
Haywood Tire & Eng. Co. 110
Henney Buggy Branch. 76
Herschell-Spillman Co. 56
Hess-Bright Mfg. Co. 90
Hide, Leather & Belting Co. 69
Hill Pump Valve Co. 120
Highland Body Mfg. Co. 72
Hill-Smith Mfg. Co. 88
Holmes & Bros., Robert. 129
Houk Mfg. Co. 116
Hudson Sales Corp. 115
Hurlburt Motor Truck Co. 119
Hyatt Roller Bearing Co. 119

I

Imp Carbon Chaser Corp. 117
Inter-State Motor Co. 120

Digitized by Google

Advertisers' Index

J

Jenkins Vulcan Spring Co. 105
Johnson & Son, S. C. ..... Back Cover
Johnson Co. 4
Johns-Manville Co. 99

K

K-P Manufacturing Co. 117
King Motor Car Co. 100
Kissel Motor Car Co. 114
Krembs & Co. 116

L

Liberty Motor Car Co. 118
Long Mfg. Co. 106
Lunkenheimer Co. 108

M

Manley Motor Corp. 117
McQuay-Morris Mfg. Co. ..... 3rd Cover
Merchant & Evans Co. 130
Michelin Tire Co. 53
Moline Automobile Co. 98
Monroe Motor Co. 83
Morse Twist Drill & Mach. Co. 108
Mosler & Co., A. R. 120
Motor Age 116
Motometer Co. 101
Motor Products Corp. 121

N

National Rubber Co. 115
New Departure Mfg. Co. 117
New Era Spring & Specialty Co. 129
New Process Gear Corp. 116
Norma Co. of America 3

P

Perlman Rim Corp. 121
Phillips-Brinton Co. 103
Pittsfield Spark Coil Co. 113
Pouvailsmith Corp. 115
Prest-O-Lite Co. 119
Pfau Mfg. Co. 112

Q

Quaker City Rubber Co. 116

R

Rayfield Carburetor Co. 54
Redee Manufacturing Corp. 117
Republic Rubber Co. 108
Rubber Insulated Metal Corp. 115

S

Scripps-Booth Corp. 118
Selden Truck Sales Co. 111
Shaler Co., C. A. 82
Sheldon Axle & Spring Co. 102
Silvex Co. 78
Sloat Co., E. R. 112
S. K. F. Ball Bearing Co. 85
Sparks-Withington Co. 115
Stewart Aluminum Compound Co. 129
Stewart Motor Corp. 91
St. Louis Electrical Wks. 121
Stephens Motor Branch 57
Stevens & Co. 121
Stewart-Warner Speedometer Corp. ..... 2nd Cover
Studebaker Corp. 1
Sunderman Corporation 64

T

Tungsten Mfg. Company 132

U

Universal Car Equipment Co. 129
United Engineering & Mfg. Co. 113
U. S. Ball Bearing Co. ..... Front Cover
U. S. Motor Truck Co. 90
Universal Rim Co. 77

V

Vanderpool Company 100
Van Cleef Bros. 121
Van Sicklen Co. 111
Velie Motor Vehicle Co. 55
Vesta Accumulator Co. 87

W

Walden Mfg. Co. 131
Webber Co., Phil H. 109
Woodworth Mfg. Co. 89
Wood & Co., W. C. 110
Woodstock Hotel 112

Z

Zenith Carburetor Co. 120

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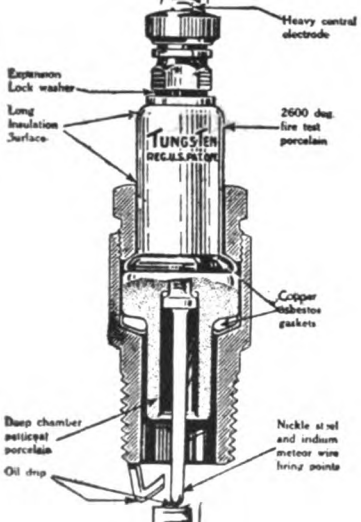
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